ENGINEERING NEWS-RECORD

OCT. 3, 1957

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INDUSTRIAL ASPHALT—world's leading commercial producer of asphalt paving materials has just added the 22nd Standard Asphalt Plant to its growing company.

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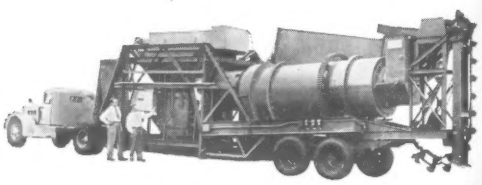
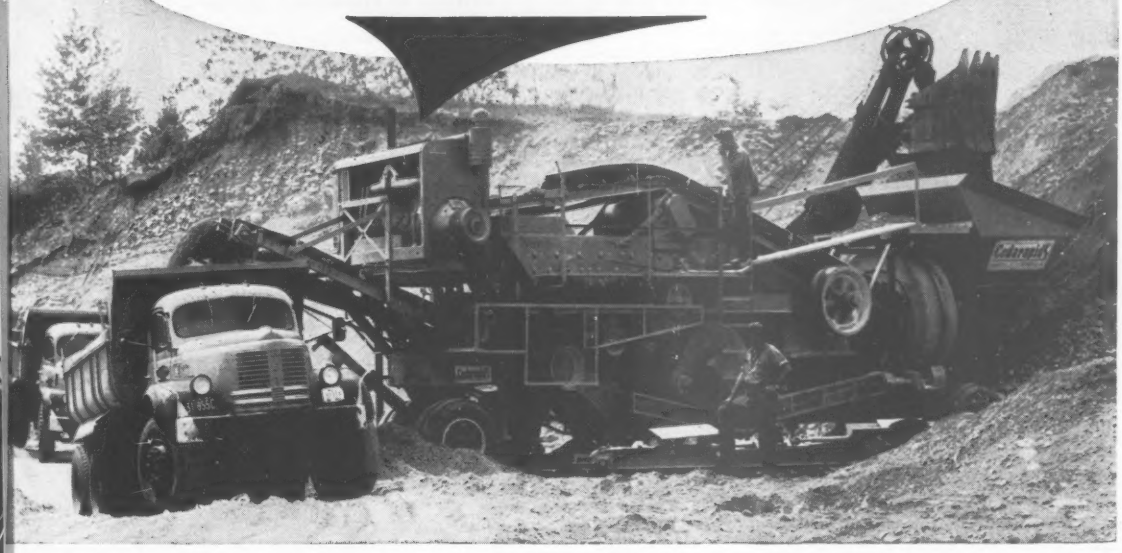


PARTS WAREHOUSES IN LOS ANGELES AND DECATUR, ILLINOIS

Russell H. Stewart Construction Co. Ltd. gets

100 TONS BONUS PRODUCTION PER DAY with MURPHY DIESEL POWER



The Murphy Diesel powering this Commander Plant permits Russell H. Stewart Construction Co. to produce an *extra* 10 tons per hour of finished aggregate, according to a report from J. H. Godfrey, Vice President of the Orillia, Ontario company.

Figure the kind of profit *you* can make with the same kind of dependable, economical power.

If you work 250 days a year, those 100 extra tons per day add up to a 25,000-ton profit bonus . . . *because they're produced at no extra cost for labor, operation or maintenance!*

In fact, Murphy Diesels *reduce* production costs. As Mr. Godfrey reports, maintenance costs on their Murphy Diesel are "considerably lower." Low fuel costs and steady, uniform power add to Murphy's economical operation.

Figure the additional jobs you can handle, the lower bids you can make with the extra profit margin Murphy Diesels give you. Apply those extra yearly profits to the initial cost of your engine. You'll see why Murphy Diesel Power is your best buy on all counts.

Wherever your job is located, there's a dependable Murphy Diesel Dealer nearby. You can count on him for prompt, expert maintenance and parts service.

379N

Murphy Diesel delivering 182 HP (continuous) powers plant producing crushed gravel for Ontario Dept. of Highways and for municipalities. "The Murphy Diesel is better," says the owner, "for starting in cold weather and in general maintenance."

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EIGHTY-THIRD YEAR OF PUBLICATIO

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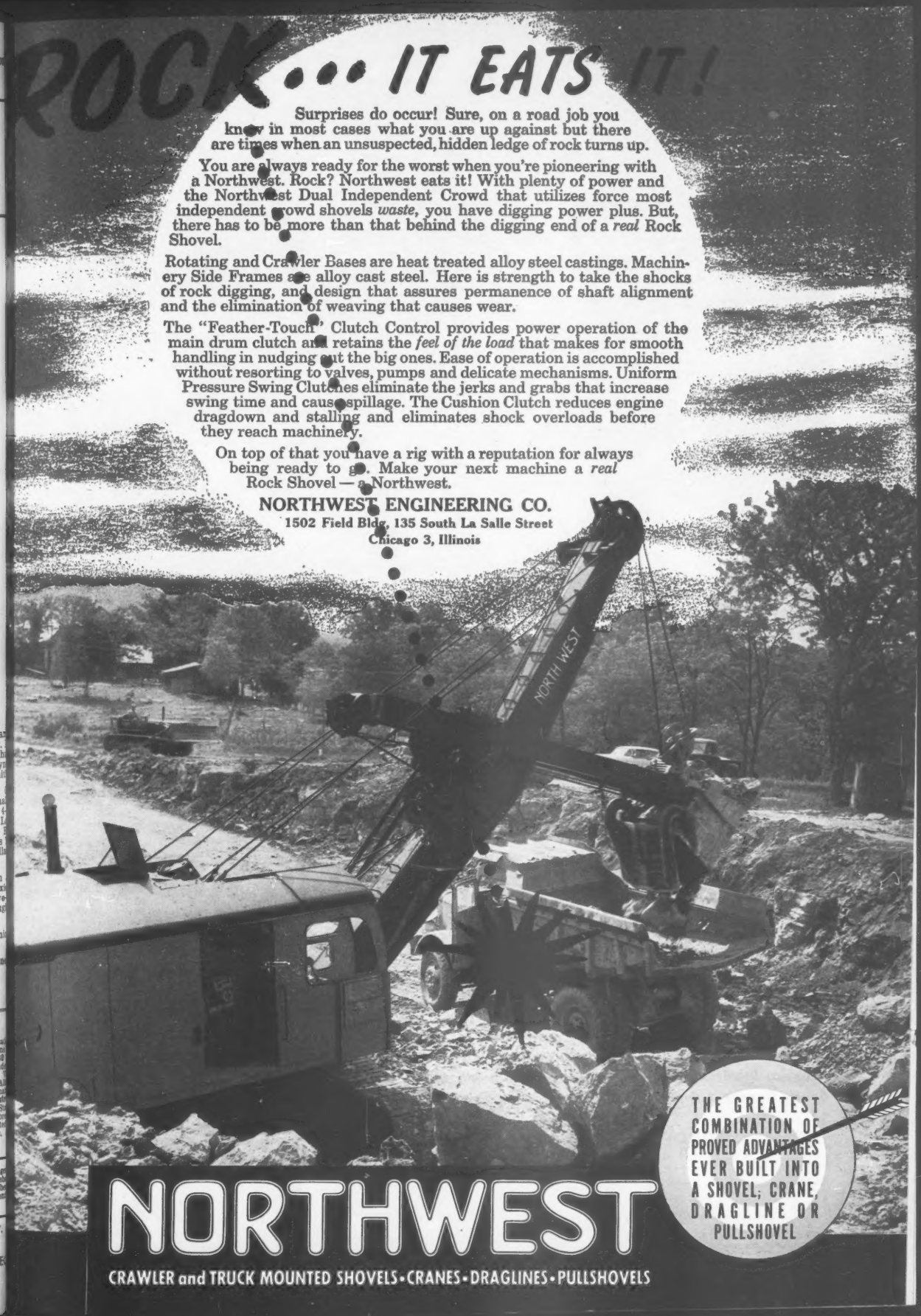
ROCK... IT EATS IT!
Surprises do occur! Sure, on a road job you know in most cases what you are up against but there are times when an unsuspected, hidden ledge of rock turns up.
You are always ready for the worst when you're pioneering with a Northwest. Rock? Northwest eats it! With plenty of power and the Northwest Dual Independent Crowd that utilizes force most independent crowd shovels *waste*, you have digging power plus. But, there has to be more than that behind the digging end of a *real* Rock Shovel.
Rotating and Crawler Bases are heat treated alloy steel castings. Machinery Side Frames are alloy cast steel. Here is strength to take the shocks of rock digging, and design that assures permanence of shaft alignment and the elimination of weaving that causes wear.
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THE GREATEST COMBINATION OF PROVED ADVANTAGES EVER BUILT INTO A SHOVEL, CRANE, DRAGLINE OR PULLSHOVEL
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CONNECTICUT TURNPIKE CONSTRUCTION: Savin Construction Corporation Division of Merritt-Chapman & Scott is building four sections of this $398,000,000 project, and is also building a section of the new Massachusetts Turnpike. All Savin's equipment is Texaco-lubricated.

"...help greatly to keep our job

SAVIN CONSTRUCTION CORPORATION Division of Merritt-Chapman & Scott, East Hartford, Connecticut, operates well over a thousand pieces of construction equipment. All of them are lubricated exclusively with Texaco—and have been for years. Let Savin tell you why—**"Texaco lubricants and service have never let us down. Texaco Lubrication Engineers work closely with us on our jobs and their recommendations in addition to giving our equipment the protection it must have—help greatly to simplify our lubrication procedures, keep our maintenance costs low and our jobs on or ahead of schedule."**

The Texaco Simplified Lubrication Plan used by Savin includes such famous products as *Texaco Marfak Heavy Duty* for wheel bearings and gener *Lubricant Texaco R* ydraulic *Duty Spec*

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ubrico *Texaco Regal Oil R&O* for air compressors and
ts lo hydraulic equipment, *Texaco Ursa Oil Super*
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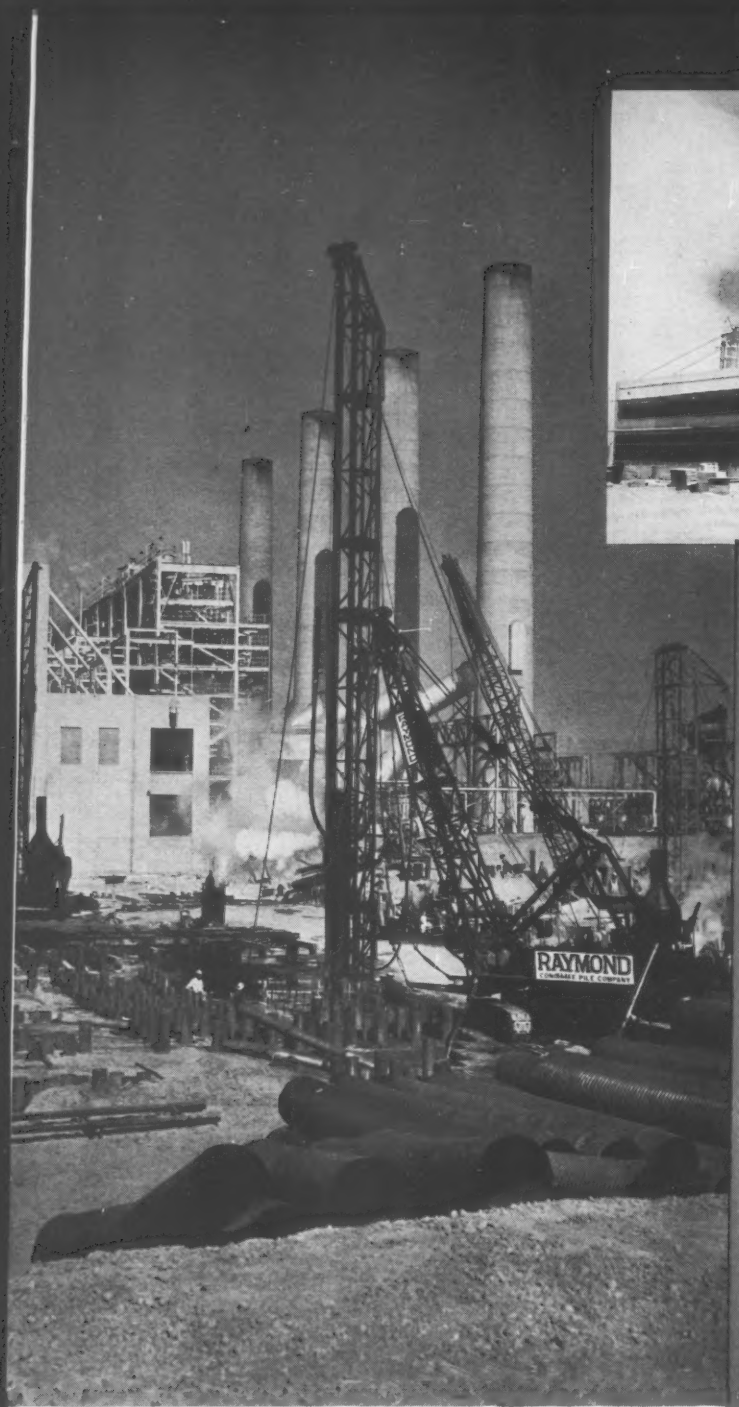
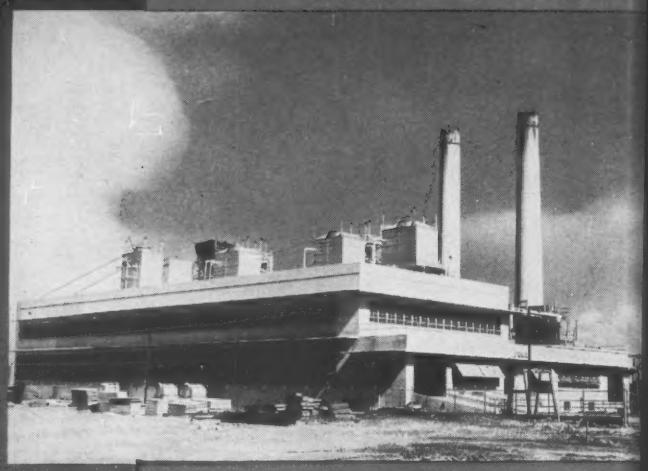




POWER PLANTS Raymond installed the foundation for the power plant at the left in California while the power plant above, located in Puerto Rico, was completely constructed by Raymond.

OIL Tanker pier in Australia (above) is another example of Raymond's complete construction services outside the United States. Typical of foundation work in this country is the Raymond supported refinery (bottom) in Toledo, Ohio.

Raymond

THE COMPANY THAT LEADS A DOUBLE LIFE

FOR 60 YEARS, we have been recognized as one of the country's leaders in foundation work. While it's true we have completed more than 30,000 foundation and soil investigation contracts for important industrial and civic structures during this time, this represents only one part of our large scope of activities. In this country we also handle marine and heavy construction as well.

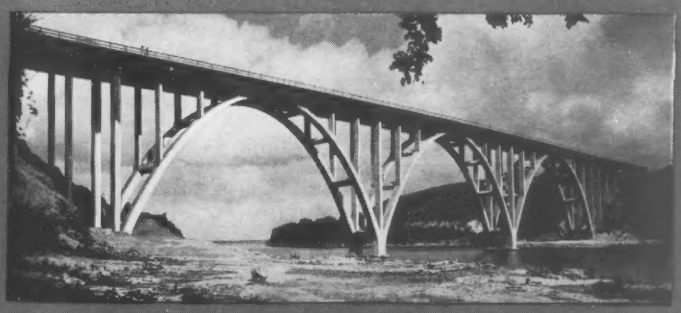
And abroad, Raymond provides a *complete* service for every type of general construction . . . from engineering studies and planning to the actual building of dams, power plants, oil refineries, housing, highways and hospitals.

This all began when we, as a pioneer in foreign construction work,

HIGHWAYS — Our foundation experience plays an important part in the country's mushrooming highway program as evidenced by the work on the New Jersey Turnpike (right). In South America (below), Raymond engineers are playing a major role in Columbia's new network of highways.

BUILDINGS — Above is a Raymond-built hospital in Venezuela while the bank building in Atlanta, Ga. is supported by our foundations—both excellent examples of Raymond's diversified activities.

RAYMOND
specializes in foundation installations at home . . . and general construction abroad.



BRIDGES — Cuban bridge (above left) is an outstanding example of Raymond's complete construction services abroad. The Lake Pontchartrain Bridge (above right), world's longest over water bridge, rests on Raymond Concrete Cylinder Piles.

discovered it was necessary to enlarge our engineering and construction facilities to meet increasing client requirements. The more we expanded, the more services were needed, until today, we have completed over 1275 general construction projects abroad.

We cordially invite both governments and private industry to let us apply our skills for foundation, marine or heavy construction work here in the United States, or any type of general construction abroad.

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AROUND THE WORLD
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IN THIS COUNTRY: Foundations . . . Marine Structures . . . Heavy Construction . . . Soil Investigations
OUTSIDE THE UNITED STATES: Complete Services for all types of construction

New grade of wire rope developed for toughest jobs—

HAZARD LAY-SET VHS® 15% stronger

for example: **A Strip Miner Gets 60% More Service from Lay-Set VHS Dragline**

● Everywhere operators are talking about the new grade of rope known as VHS which means Very High Strength. They have heard about its great service on jobs such as draglines, scrapers, shovel hoists, logging chokers and rotary drilling.

"I always thought one line was pretty much like the next until we gave VHS a try on our Lima 2400," said Mr. Gene Bartoli, owner of A&B Construction Company, Nanticoke, Pa. "We're still using our original VHS dragline after 3 weeks of rough going. This is at least 10 days more service than we ever got from any other rope."

That is because LAY-SET VHS is tougher and more wear-resistant as well as 15% stronger. VHS also comes with factory built-in lubrication which adds to its service life.

If your work calls for a superior grade of rope, order LAY-SET VHS—it's the best you can buy. If you don't need its greater strength and ruggedness, order LAY-SET preformed made of Improved Plow Steel. This was the highest grade until our engineers perfected VHS. This great new rope is now available at LAY-SET distributors everywhere. • *For further details write for Bulletin DH 513-H.*

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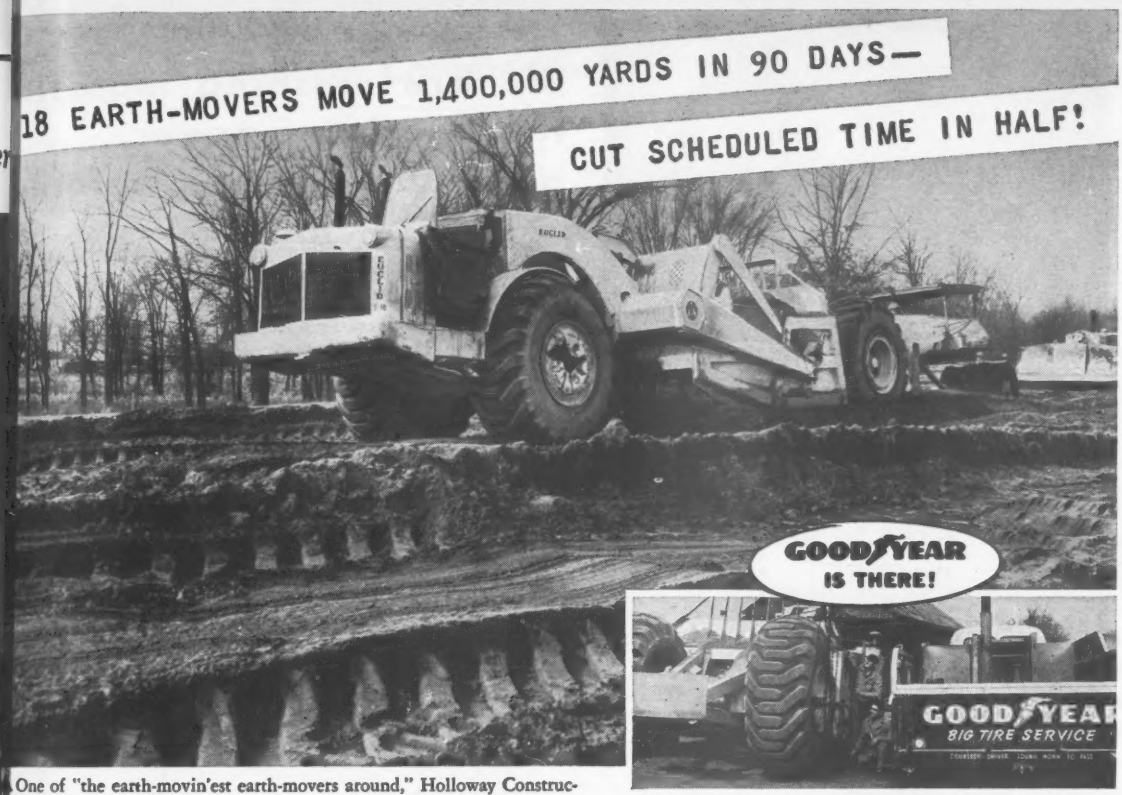
American Chain & Cable Company, Inc.
Wilkes-Barre, Pa., Atlanta, Chicago, Denver, Houston, Los Angeles, New York, Odessa, Tex., Philadelphia, Pittsburgh, Portland, Ore., San Francisco, Bridgeport, Conn.



▲ One of "the earth-movin'est earth-movers around," Holloway Construction Co., Livonia, Mich., proved it again when grading for relocation of U. S. 16 at Brighton, Mich. Work started 12 days after job was let—and 3 miles of sand, clay and muck up to 40 feet deep were hustled as never before. Tires shown are Goodyear TUBELESS Sure-Grip Lug—built with triple-tempered TRIPLE-TOUGH 3-T NYLON Cord.

▲ GOODYEAR BIG TIRE SERVICE at Holloway's U. S. 23 relocation job at Fenton, Mich. Strategically located, well-equipped, well-manned service like this cuts down time to a minimum wherever Goodyear helps jobs roll. Tire shown is Goodyear TUBELESS again!

80% CUT in earth-mover tire down time!

*That just **begins** your savings with 3-T Nylon Cord*

TUBELESS TIRES!

ON JOB AFTER JOB, contractors agree that tube and flap troubles cause up to 80% of tire down time. End tubes and flaps and those troubles end, too—and you also save on tube replacement and inventories.

You save time mounting—you save extra valve parts—you save on maintenance, for with Goodyear TUBELESS many repairs may be made *without removing tires!*

YOU SAVE TIRES, TOO—for with Goodyear TUBELESS, small injuries usually show *before* they get serious.

So be sure you specify Goodyear 3-T Nylon Cord TUBELESS tires on all new equipment—and see your Goodyear dealer for change-over of present vehicles. Goodyear, Truck Tire Dept., Akron 16, Ohio.

Buy and Specify

GOODYEAR

MORE TONS ARE HAULED ON GOODYEAR TRUCK TIRES THAN ON ANY OTHER KIND

All-Weather, Road Lug, Sure-Grip—T.M.'s The Goodyear Tire & Rubber Company, Akron, Ohio

NOW TUBELESS OR TUBE-TYPE WITH 3-T NYLON CORD!

SURE-GRIP LUG

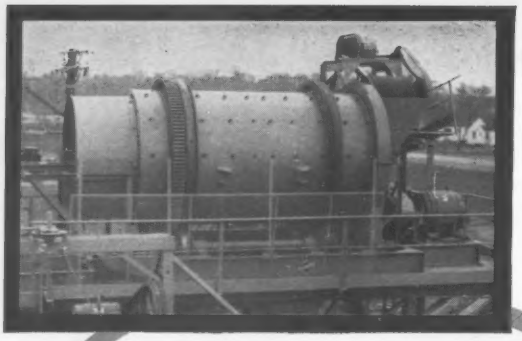
ALL-WEATHER EARTHMOVER

HARD ROCK LUG

HARD ROCK RIB

ROAD LUG

Look for this nearby Goodyear dealer sign for better tire values—better tire care.



MR. COURTNEY says:

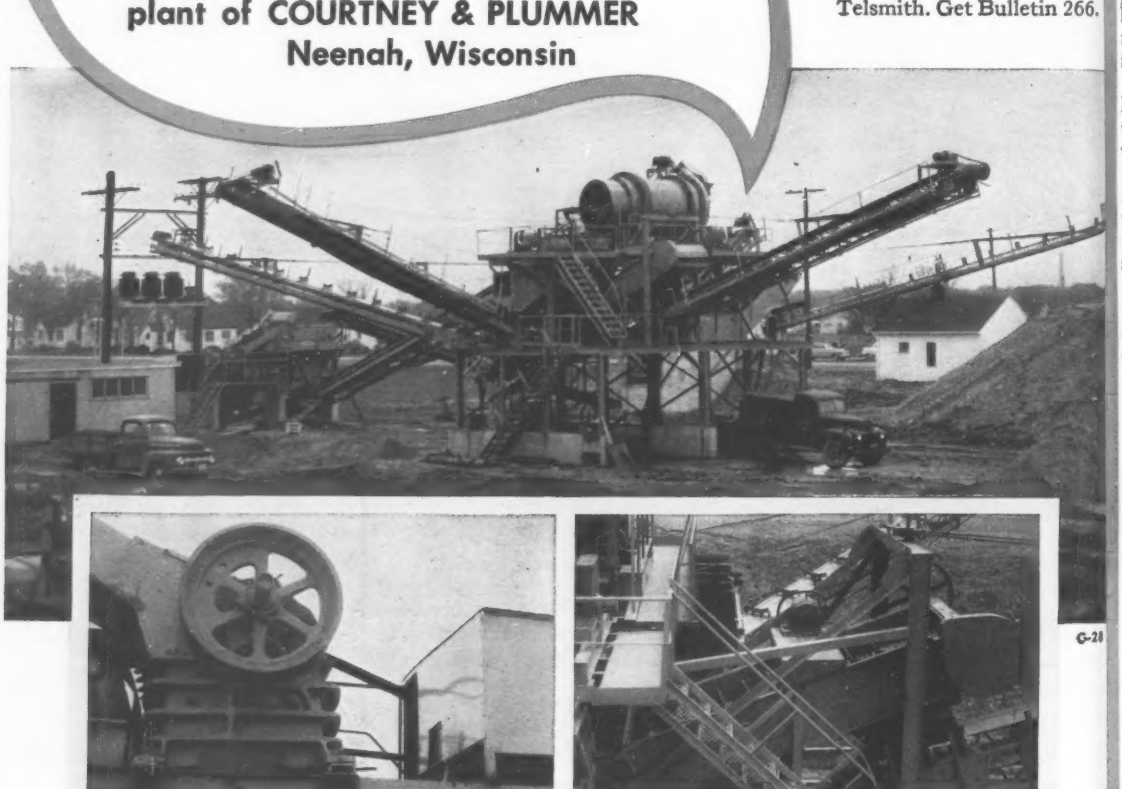
"We are washing materi that we have never been able to wash before.

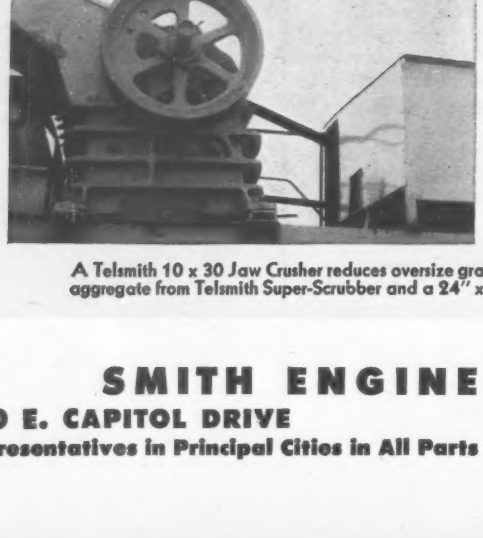
Courtney & Plummer had a pit problem — how to remove clay and dirt. Oversize gravel is crushed by a 10 x 30 Telsmith Jaw Crusher; then all sand and gravel goes to the 72" Telsmith Super-Scrubber. Its high speed, terrific impact and grinding action scrubs the aggregate *clean*. Plant capacity is 125-150 tons hourly of concrete and mason sand, and minus 1½" plus 1", minus 1" plus 7/16", minus 7/16" plus ¼" gravel. For over 20 years Courtney & Plummer have used Telsmith equipment in various operations. All new equipment in their new plant is Telsmith. Get Bulletin 266.

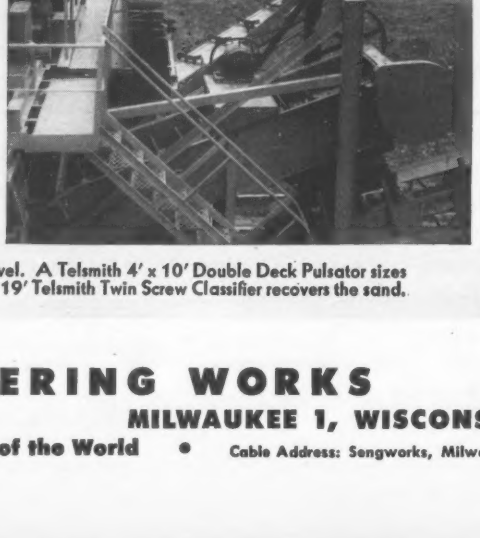
TELSMITH®

72" Super-Scrubber

handles all sand and gravel at new plant of COURTNEY & PLUMMER Neenah, Wisconsin







G-21

A Telsmith 10 x 30 Jaw Crusher reduces oversize gravel. A Telsmith 4' x 10' Double Deck Pulsator sizes aggregate from Telsmith Super-Scrubber and a 24" x 19' Telsmith Twin Screw Classifier recovers the sand.

SMITH ENGINEERING WORKS

500 E. CAPITOL DRIVE **MILWAUKEE 1, WISCONSIN**

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Reader Comment

Says Wrong Man Credited

SIR—I read with interest the article "Up Here They Built a New Roof, but Down Below It was Business as Usual," in ENR July 25, p. 61.

I have to say that I was rather stupefied to read that the creator of the whole plan and new roof construction was Klabin's engineer, Mr. Andre Denis—an assertion which is not true.

Instead, the facts are that the main idea, the planning and overall responsibility for construction were mine.

JOSEF LANGHAMMER
Civil Engineer
Parana, Brazil

Records, Anyone?

SIR—Brownlee Dam (ENR Aug. 15, p. 33) is described as "the second highest rockfill dam in the world, yielding first place by a scant foot to a 396 ft. high Milboro Dam in Japan.

In this particular instance, if Milboro Dam is truly the highest rockfill dam in the world, would you explain to me what has happened to Mud Mountain (Stevens) Dam on the White River southeast of Seattle? Your magazine was proclaiming it to be the highest rockfill dam in the world as late as 1948 and reported its height to be 425 ft. Has Stevens Dam shrunk, or was its "record" disallowed on some basis such as the construction crew using benzedrine?

•

SIR—The article on Brownlee Dam states: "When completed it will be the second highest dam in the world, yielding first place by a scant foot to a 396-ft high Mihoro Dam in Japan." However, the Ambuklao hydroelectric project located in the Philippines (ENR Apr. 16, 1953, p 43) has a 430 ft high rockfill dam designed by Harza Engineering Co. This structure was completed in 1955 by Guy F. Atkinson Co. and is functioning under the normal maximum operating pool level. In addition, Harza Engineering Co. designed the 425 ft high Derbendi Khan rockfill dam located in Iraq. This project is now under construction by Derbendi Khan Contractors under the supervision of the Harza Engineering Co.

Both Brownlee and Mihoro dams are by no means small structures and the writer does not intend to depreciate their magnitude, but merely indicate that other structures exceed them in height. Any fill structure in the vicinity of a 400-ft high is indeed a major undertaking.

R. F. EDBROOKE
Project Manager Ambuklao Project
Harza Engineering Co.

EDITOR'S NOTES: The record claims for Mihoro and Brownlee dams are based on an exhaustive compilation of all dams in the world 100 ft or higher prepared by Robert A. Sutherland of Ebasco Services, Inc. (ASCE Proceedings Separate No. 355, Nov., 1953). Mr. Sutherland listed Mud Mountain and Ambuklao as earthfills, reserving the rockfill list for dams with face membranes or sloping cores. Under a broader definition, which would include thin vertical impervious core structures in the rockfill list, Ambuklao, Mud Mountain and Derbendi Khan would rank among the highest rockfills. And these will be topped by Goshenenalp Dam currently under construction in Switzerland. However, the new record holder is most likely to be the Corps of Engineer's Cougar Dam in Oregon scheduled for construction next year. Cougar is projected as 445 ft high with a sloping impervious core.

Engineering News-Record welcomes expression of opinions from its readers. Comment should be as brief as possible and pertinent to subjects of current construction importance. Letters should be addressed Editor, Engineering News-Record, 330 W. 42nd St., New York 36, N. Y.

CALENDAR

Southeastern Association of State Highway officials, 16th Annual Meeting, Atlanta, Ga., Oct. 1-3.

Federation of Sewage & Industrial Wastes Associations, Hotel Statler, Boston, Mass., Oct. 7-10.

American Institute of Steel Construction, thirty-fifth annual meeting, Hotel del Coronado, Coronado, Calif., Oct. 7-10.

Society for Experimental Stress Analysis, annual meeting Hotel El Cortez, San Diego, Calif., Oct. 9-11.

National Safety Congress and Exposition, Hotels Conrad Hilton, Congress, Morrison, La Salle and Hamilton, Chicago, Ill., Oct. 21-25.

Engineers' Council for Professional Development, Engineers Joint Council, joint annual general assembly, Hotel Statler, New York City, Oct. 24-25.

Hydraulics Conference and Annual Pacific Northwest Meeting, American Geographical Union, State College of Washington, Pullman, Wash., Oct. 28-31.

Building Officials Conference of America, Inc., central west regional meeting, Chase Hotel, St. Louis, Mo., Oct. 31, Nov. 1-2.

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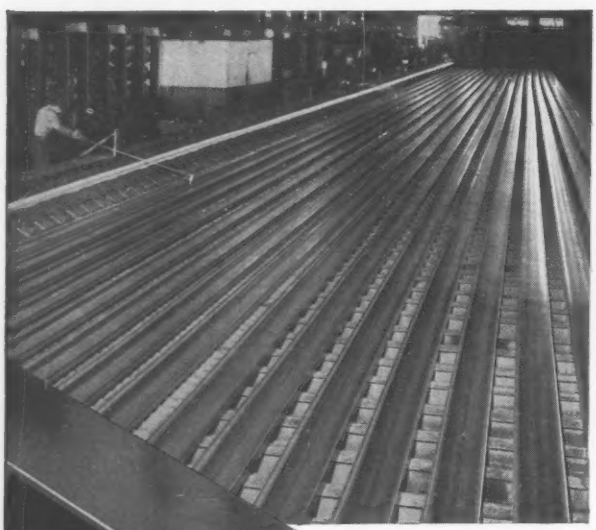

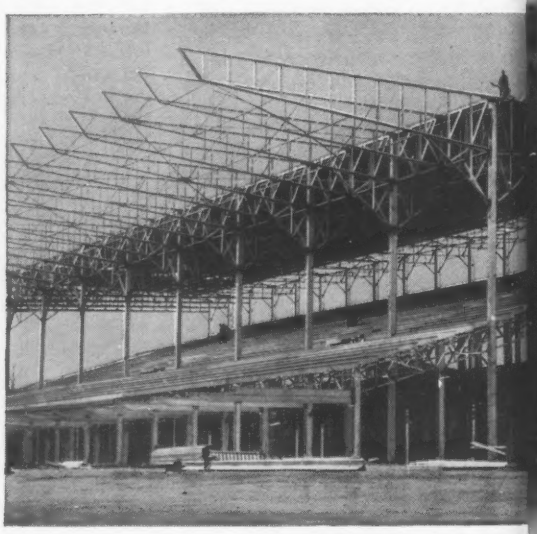

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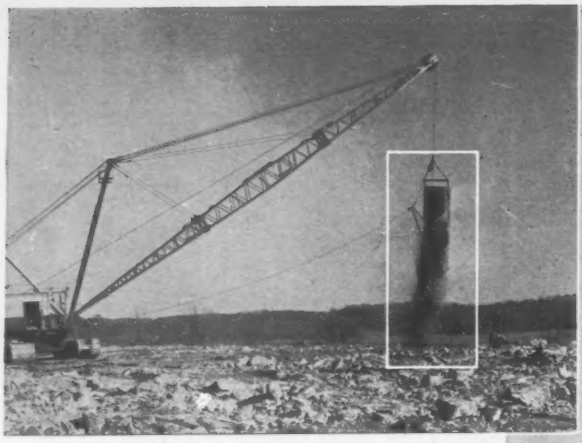

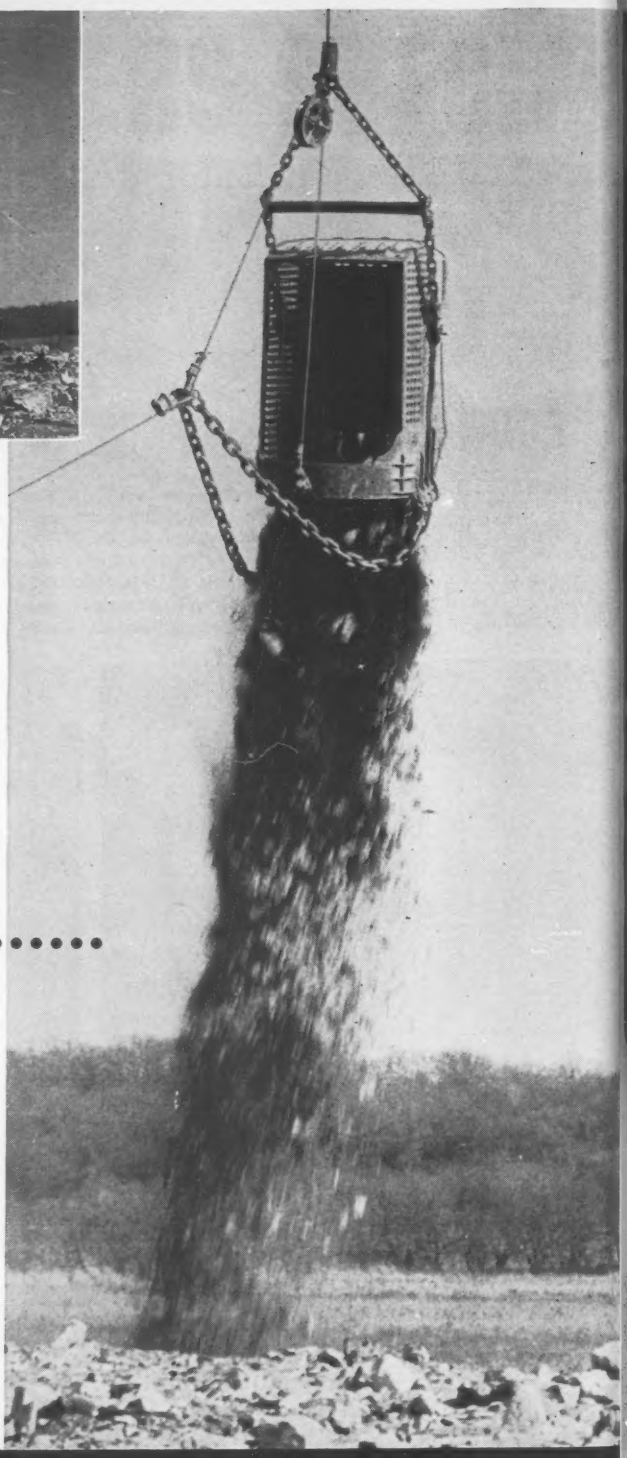

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THE CONSTRUCTION WEEK

SWITCH FROM HYDRO—British Columbia Electric Co. has announced plans for a $100 million, 900,000 kw thermal plant in the Greater Vancouver area "because there is no hydro source available at the present time to meet the demands of the company after 1960." Company spokesman indicated that it was necessary to switch from major hydro development because of continuing delay in deciding when and by whom huge Mica Creek Dam on the Upper Columbia River will be built. The BCE move places additional pressure on the Canadian government to reach accord with the U. S. over Columbia River power development in Canada (ENR Aug. 23, 1956, p. 21).

WASTES PACT FOR THE FUTURE—A 20 year agreement whereby an industrial waste treatment plant will accept primary treated domestic sewage was signed last week by the Somerset-Raritan Valley Sewerage Authority and the American Cyanamid Co. in Bound Brook, N. J. The company has a very unusual $4.5 million facility under construction and the authority is expected to start its primary plant, adjacent to the company's shortly. For the story behind the industrial plant and the novel pact, see page 25.

FUND DRIVE TO GET STARTED—A campaign is to get started before the end of the year within business and industry for the $10 million Engineering Center to be built on United Nations Plaza in New York City (ENR Aug. 29, p. 96). United Engineering Trustees, Inc., has announced appointment of Mervin J. Kelly, president of Bell Telephone Laboratories, as general chairman of the effort. UET's announcement states that the initial effort will be directed toward firms; it doesn't say so, but it is inevitable that before the fund drive is through all 184,000 individual engineers included in the associated engineering societies will have been solicited for funds.

AND STILL MORE FUNDS NEEDED—So far, there is only a $50,000 appropriation available for starting the survey of the engineering profession planned by Engineers Joint Council and the Engineers' Council for Professional Development. Stressing the urgency for more money for this study, ASME President William F. Ryan last week pictured the profession's organization chart as a rabbit warren inhabited by two-headed rabbits.

EXTERIOR DECORATION—Wyoming highways of the future will be constructed with contrasting colors between roadways and shoulder areas. Use of a solid-line shoulder stripe will be limited principally to secondary routes. On main arteries the roadway will be dark while the shoulder will be light. Contrast will be obtained by using black asphalt seal on the road and white stone chips on the shoulder.

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WASHINGTON OBSERVER

- Contractor alliances formed
- Tight money under attack again
- Budget Bureau loses an aid fight
- BPR stimulates land-use planning

● **Contractor organizations teamed up in two significant cooperative moves last week.**

Most important is an alliance between general contractors and mechanical specialty subcontractors. They first got together in 1956, after a heated battle, to back a compromise that amended the controversial federal bid-shopping bill to remove AGC objections. Out of that first get-together comes the new permanent alliance, the National Joint Cooperative Committee of AGC and the Council of Mechanical Specialty Contracting Industries.

First aim: Defeat of Walter Reuther's plan for putting plant additions and alterations under jurisdiction of industrial unions. The joint contractor forces will work on the side of the construction and building trade unions, trying to prevent industrial management from accepting the Reuther plan (see page 110).

In another move, AGC and the American Road Builders Association formalized a cooperative effort to serve the roads branch of the construction industry. Both groups will submit action plans for full membership approval at their annual conventions early in 1958.

● **Congressional housing investigators are zeroing in on the Administration's tight money policy.** The House Banking subcommittee on housing, under chairman Albert Rains, is set for a two-day inquiry at Miami next week—Oct. 8-9.

Rep. Rains has two goals. His first is to show that tight money makes it difficult for builders to obtain FHA and GI financing and, therefore, is responsible for an upsurge in second mortgage financing, land sale contracts and other "unhealthy" practices. The second goal is to demonstrate that high interest has forced many municipalities to postpone construction of adequate water and sewerage facilities in burgeoning suburbia.

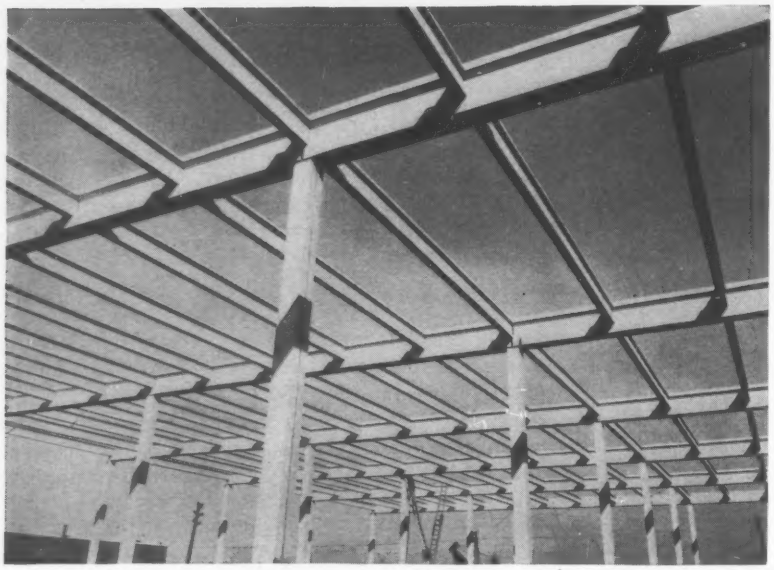
Government officials are worried, too. FHA regulations bar second mortgages on loans insured by the agency. But officials say that increasing numbers of lending institutions are skipping loan insurance entirely these days, going in for conventional mortgages which do not prohibit secondary financing or discounting.

● **The Budget Bureau has lost its fight to hold down federal spending for sewerage works.** Since August, Budget Director Avery Brundage and Secretary of Health, Education and Welfare Marion Folsom have been squabbling about the amount of Public Health Service grants that should be allowed for municipal sewage treatment facilities.

Mr. Folsom has won. And that means the full $57 million that Congress authorized will be available for commitment. Officials say they expect the entire amount to be committed by next June 30.

● **Bureau of Public Roads is trying to stimulate metropolitan land use planning.** It is supplying federal housing agencies with a list of areas where route location is stalled. RPR's hope: That the Housing and Home Finance Agency will give such localities 50-50 grants-in-aid in order to speed up master plans for land use, removing route location blocks that now exist.

FRAMEWORK OF THE FUTURE IS GOING UP *Today!*



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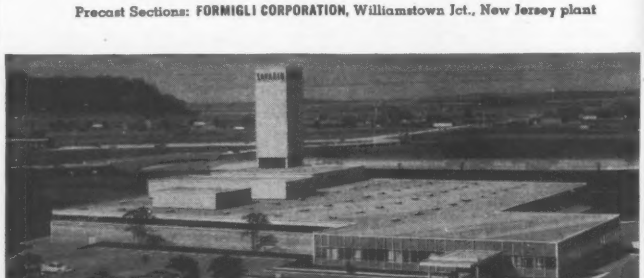
General Contractor: **WALTER KIDDE CONSTRUCTION COMPANY**, New York City
Precast Sections: **FORMIGLI CORPORATION**, Williamstown Jct., New Jersey plant



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World Series crowd jams "the House That Ruth Built" to see . . .

A Builder's Team vs. a Mole's

The opening-day crowd managed to contain itself for the pre-game ceremony. While the Yankee team strung itself out along the first base line and the Braves lined up from home to third, a band played the National Anthem in center field.

Then the noise from the throng swelled up to a volume befitting the occasion. The umpire hollered "Play Ball," and the '57 World Series was on.

It was a "Construction Series."

In the executive box directly behind home plate in the mezzanine sat big, soft-spoken Del E. Webb, co-owner with Dan Topping of the World's Champions, and a builder who this year will do about $100 million worth of construction.

And in a box right next to the stadium's visiting team dugout was Lou Perini, the man who made Milwaukee famous—a heavy contractor and Mole awardee, in the same $100 million-a-year league.

The two big-time contractor-sportsmen appeared a curious contrast as Milwaukee's Red Schoendienst walked out to face the series' first pitch: Lanky, six-four Del Webb, who made the minors as a promising pitcher before arm-trouble put him back into his carpenter's trade and on to fabulous success in construction; short, friendly Lou Perini, who made the Majors first in construction, then made his mark in baseball.

Del Webb, the man with the winning streak (eight pennants in ten years) wouldn't admit to being nervous over the opening game. Said Lou Perini, "The only difference between us is that he's used to it."

Owner Perini entered the stadium for his first game of what he hopes will be seven as a happy challenger. Dangling from his necktie chain was his "Happy Brave," colorful charm, symbol of his team, which was presented to him in its last big year, 1948. He had come to Yankee Stadium to get a new "Happy Brave"—this time by a win. And he was glad it was the Yankees that his team had come through to face. Eager for a crack at the Yanks, he'd have been disappointed had they not won the American League flag.

Owner Webb, in his box behind the plate, had every reason to be confident. The 8 to 5 odds quoted days before the game may or may not have been the true measure of his Yankees' chances. At any rate, his Casey Stengel was out to make it eight out of nine World Series wins in his incredible career with the Bombers. And he may have been out to beat Lou Perini's team for a special reason: In '43 in Boston, Lou Perini and two partners bought out other Braves stockholders and immediately let Manager Stengel go. "What a brilliant baseball mind I must have been," says the man from Framingham (Mass.) today.

Along with his partner, the professional sportsman Dan Topping, builder Webb had a box-full of friends on hand for the opening-day game; among them, Henry J. Kaiser, the industrialist who also has made quite a name for himself in construction. Before the game, the rangy and reticent Southwesterner had refused to say his team would win the series. He'd say only: "They'll know we're there."

Del Webb had come east to New York City from his $25 million Union Oil office building job in Los Angeles. Phoenix is his home-base but he says he doesn't spend too much time anywhere: "If I'm two days in any one place, I'm lucky." His 300-man permanent staff runs an army of subcontractors; their total force once hit a 25,000-man peak during World War II.

Business definitely infringes upon Del Webb's hobby. He is ashamed to think of how few ball games he gets to see in a season—not as many as he'd like.

For the construction man who would consider baseball club-ownership, he would advise that if you enjoy having a

. . . A construction series gets under way

lot of things to worry about—morning, noon and night—it can be a lot of fun.

Lou Perini has a more philosophical view: He thinks his "Cinderella ball club" would have an even tougher row to hoe in a league full of teams owned by contractors. Contractors should be good at baseball, he says; the game takes the same kind of imagination, willingness to gamble, and planning for the future as does construction.

He rates baseball just behind religion among the forces for good in the U. S., and he relates with obvious pleasure how baseball tends to bring people closer together.

"I'm on a job somewhere and see this catskinner eyeing me. Finally, he gets off his machine, and I see he wants to say something to me.

"'You Perini?' he says. And you answer. 'You own all this equipment?' he says. And you nod 'Well how come a guy can be so smart to own all this and so dumb when it comes to baseball?'"

Boss Perini enjoys running into anyone more expert on his hobby than he.

Lou Perini's huge construction organization, roughly 15,000 men, is 98% baseball fans (their estimate). And his whole family is baseball-minded. One of his greatest pleasures has been bringing some of his seven children and three children-in-law to New York when the Braves played the Giants or the Dodgers. What he'll do next year if the Dodgers follow the Giants west he just doesn't know.

But as the first pitch of the '57 came whistling in this week neither Lou Perini nor Del Webb entertained the faintest thoughts of next year. This was the year that mattered—and the best four out of seven.

From Framingham to Phoenix, on skyscrapers and in tunnels, Webb men and Perini men were alive to the fact. The Construction Series had started.

As to its outcome, one thing was sure: Some contractor's team will win.

Studies for Interstate Net Readied

Curtiss reports to Southeastern Assn. of State Highway Officials on studies affecting fund apportionment

Optimistic reports of progress on Bureau of Public Roads studies for Congress and on solution of the bridge clearance problem for navigable streams were given this week to the Southeastern Association of State Highway Officials at the organization's annual meeting in Atlanta.

Public Roads Commissioner Charles D. Curtiss told the assembled highway officials from a dozen states that BPR would be ready in January to give Congress the latest 1956 estimates of the various states on the cost of completing interstate routes of the designated 40,000-mile system that lie within their respective borders.

By law, these estimates will determine apportionment of federal funds for the interstate system in the fiscal years 1960, 1961, and 1962.

Mr. Curtiss told the highway officials that the states have selected, and the bureau has approved, the general location lines for 80% of the total mileage. For the remainder, he said, the highway departments with concurrence of the bureau are using the most feasible and reasonable of several alternate routes as the basis for estimating costs. Every mile of the system, he declared, has been gone over by on-the-spot field teams of state and public roads engineers.

No definite promise was made by Mr. Curtiss as to what the bureau could do in meeting the deadline for findings on maximum desirable sizes and weights of vehicles. The Highway Act of 1956 calls for recommendations to Congress by March 1, 1959. But the bureau's advice will depend in great part on the results of the AASHO road test, which has run into a revision of the cost estimates due in January, 1961, to establish the Division of Federal Interstate Funds among the states for the three fiscal years following 1962.

To make the 1957 state estimates for Congress in January, the state highway departments have had to determine within fairly definite limits the general location of all the mileage in the 40,000 mile net. This general location misleadingly termed "final location" in BPR regulations, is necessary before the engineers can establish the number and physical dimensions of such costly elements as bridges and traffic interchanges. Until these essentials are tentatively fixed, it is impossible to develop a reasonably accurate state estimate of costs (ENR Sept. 19, p. 30).

Mr. Curtiss expressed confidence that traffic testing of the experimental road loops would start by the fall of 1958. And he added that the bureau is rounding out the information in this study for Congress by pushing ahead intensively on an analysis of broad economics of highway transportation—exploring the whole vehicle-highway relationship.

A third study, on possible reimbursement to the states for existing highways included in the interstate system, is scheduled for delivery to Congress next January, along with the revised cost estimates for the same network. These two studies are interdependent, Mr. Curtiss said, and the states now are compiling the data for the report on possible reimbursement, following completion of their work on 1957 cost estimates.

The fourth study—on possible federal action in highway safety—is coordinated with the investigations of the special House subcommittee on traffic safety.

The most complex and difficult of the five studies requires an analysis of the cost of providing highway facilities for all classes of vehicles and of the benefits derived from highways by the users, plus an estimate of benefits to non-users. This information is to help Congress set equitable tax rates for users and other beneficiaries of highways.

Southeastern officials heard equally encouraging words on the outlook for more realistic and economical handling of costly bridge clearance requirements for highway crossings over navigable waterways.

Paul F. Royster, assistant to the Federal Highway Administrator, told the conference that: (1) The Corps of Engineers is whole-heartedly and actively supporting the recently developed bridge clearance policy of the executive agencies. (2) The Navy is reviewing its requirements for waterways where its interests prevail. (3) The Senate and House committees plan early in the next session to take up legislation that will establish uniform national policy of the kind the agencies have agreed upon.

As an alternative, he mentioned a proposal advanced by the railroad and highway transport groups: Give the vessel operators all the clearances they ask for provided they pay the additional cost (on an incremental cost basis).

Highway people at the Atlanta meeting also heard of an important new book for which they have long been waiting. President W. A. Bugge and Executive Secretary A. E. Johnson of the American Association of State Highway Officials told their friends that the much-needed AASHO volume on urban highways—subtitled, "A Policy on Arterial Highways in Urban Areas"—is now available at $5 a copy from the association's headquarters office, 917 National Press Building, Washington 4.

APWA convention in Philadelphia told to . . .

Get the Public Behind Public Works

Main theme of the American Public Works Association's 63rd Annual Congress held in Philadelphia last week, was the necessity for public works people to enlist the support of the public to get a better public works job done. Coupled with this was an increasing concern for that same public's welfare and future.

At one of the general sessions, Ben West, Mayor of Nashville, made a rousing plea for help in the "fight for the rights of urbanites." He pictured the city dweller as being sorely taxed, insufficiently represented and sadly neglected.

Mayor West, who is also president of the American Municipal Association, urged a continuing fight for proper representation of the city dweller, and placed special emphasis on securing reapportionment in state legislatures. As an example of what organizing of municipalities can accomplish, he cited his own state's Municipal League. The Tennessee Municipal League has succeeded in getting the state to return to the cities a one cent per gallon share of the state gasoline tax. Until then, in the mayor's words, "The favorite method of determining the location of city limits was to find where the good highways started."

Another heavy hitter, Henry T. Heald, president of the Ford Foundation, pointed out that the urban problem was becoming larger and more complicated. He appealed to his annual dinner audience to develop an attitude of "do-it-yourself" in working on the problems, noting that it is on the local level of government that most needs to be done and most can be done. He concluded by asking that full cooperation be given to citizen groups to inspire confidence and evoke support.

The five day meeting—held in Convention Hall—was a big one, bringing together over 2,200 members and guests and 84 exhibits. And it was a lively one, with all sessions well attended and actively participated in by the audiences.

A working solution to the problem of simultaneous technical sessions was introduced for the first time. Four concurrent technical forums were run as usual on Monday and Tuesday afternoons. Then on Tuesday and Wednesday mornings, summary reports on the previous day's forums were made by the forum chairmen in general session. The method proved popular.

• **Sanitation**—At the sanitation forum, communication with other city departments, as well as with the public, also was promoted. Stafford W. Graydon, of Atlanta, said that in his city all plans for multi-family dwellings and all business buildings must be approved by the department of sanitary engineering before a building permit can be issued. This gives the department an opportunity to require easy access for trucks and personnel to refuse pick-up points.

SOL ELLENSON, new APWA president.

Indicative of the favorable reaction to such a requirement was session chairman Paul R. Screvane's stated decision to look into it as a possible rule for New York City, which he serves as commissioner of sanitation.

The refuse disposal group also heard a standardized method of determining incineration cost, which would help public officials compare incineration with other methods of disposal, presented by Abraham Michaels of Philadelphia. His cost computation was divided into five items: amortized construction cost; personnel operating cost; equipment, supplies and utilities cost; amortized major repair cost, and administrative cost.

• **Streets and highways**—At this forum, Alan M. Voorhees, of the Automotive Safety Foundation, made a number of points on how to conduct transportation studies. First, he said, is to organize a technical coordinating committee to be the operating staff for the city's entire transportation program. This should consist of key officials in municipal departments and other concerned agencies, plus representatives from the state highway department and the Bureau of Public Roads. A citizens' advisory group is also necessary to enlist public support.

With the committees established, Mr. Voorhees said, a fact-gathering program should then start. Five basic studies to get the facts were recommended: street use, traffic service, transit service, street inventory and origin and destination survey.

Then, working with a set of standards to evaluate existing and future transportation service, the coordinating committee should review and analyze the facts to develop a sound transportation program. Mr. Voorhees' advice was based on a forthcoming book, "Better Transportation for Your City," to be published by the National Committee on Urban Transportation.

Throughout the streets and highways meeting, participants were cautioned not to overlook the urban renewal possibilities that have opened up with the introduction of the federal highway program.

• **Water and sewage**—At this session, Harry E. Jordan, secretary of the American Water Works Association, talked on the conservation of water supplies, laying particular emphasis on the use of intelligent officials-in-charge to help accomplish this end. He called on the nation's farmers to practice astute land conservation measures to aid in slowing deposition of silt behind the country's water reservoirs.

Samuel S. Baxter, Philadelphia Water Commissioner, dealt with the modernization of water systems, describing in particular the strides made in his own city (ENR Sept. 19, p. 37). He also criticized the concept of cheap water, holding that the public is willing to pay more for good service.

• **Equipment**—The lack of communication among municipal officials concerned with equipment purchase, operation and maintenance was noted by the forum chairman, W. C. Wichman, Cincinnati's Director of Public Works. In an action to help remedy this, a resolution to form a committee on equipment was sent to the APWA Executive Board.

New president of the APWA is Sol Ellenson, Director of Public Works, Newport News, Va., who succeeds Robert L. Anderson of Winnetka, Ill. New vice president is William D. Hurst of Winnipeg, Manitoba. The Charles Walter Nichols Award with its $500 stipend—for outstanding achievement in the general field of sanitation—went to Michael Groem, superintendent of sewage treatment for Dearborn, Mich.

Norman R. Bennett of Akron, Ohio, was this year's recipient of the $1,000 ENGINEERING NEWS-RECORD aid-to-education award.

TEST REACTOR at the National Reactor Testing Station, Idaho, is located in a gas-tight building. Cooling tower and exhaust stacks are part of reactor facility.

AEC Previews Engineering Test Reactor

More than 300 representatives of industry, government and the Atomic Energy Commission were given a view of the new Engineering Test Reactor this week at the National Reactor Testing Station near Idaho Falls, Idaho.

The reactor was built by the AEC to test fuel elements, fuel assemblies and engineered components of nuclear power plants for aircraft, ships and industrial uses. The test reactor also will provide basic engineering for future designs.

The reactor brings into operation a neutron flux or rate of flow double that of any reactor now available for material testing. The fissioning process will create a fission heat of 600 million Btu per hour, more than four times that of any other test reactor.

It is the only test reactor with any significant amount of experimental space available within its core. Within the core are nine holes ranging from 3 to 9 in. square by 36 in. long. Adjacent to the core are 131 additional experimental holes.

The $14 million facility was completed within two years. The principal reactor building, constructed of steel, aluminum and both conventional and high-density magnetite concrete, is designed to prevent the escape of fission products. The gas-tight building, 112x 136 ft extends 38 ft down into a solid lava formation and 65 ft above ground. Its walls and floors, ranging up to 5 ft thick, also serve as radiation shields for the building.

Kaiser Engineers, Oakland, Calif., designed and constructed the reactor. General Electric Co., Schenectady, N. Y., was responsible under a $1 million subcontract to Kaiser for the reactor's nuclear process design. Phillips Petroleum Co.'s Atomic Energy Division, Idaho Falls, will operate the new engineering test reactor for the Atomic Energy Commission.

Alabama Power Plans Another Hydro Project

Less than 10 days after it received a license for a $121 million hydroelectric project on the Coosa River (ENR Sept. 19, p. 148), Alabama Power Co. received another 50 year license from the Federal Power Commission for a $38.9 million project on the Black Warrior River in Alabama.

The Black Warrior project consists of Upper New Hope Dam on the Sipsey Fork of the Black Warrior and two power plants. One plant would be at the damsite and the other at U. S. Lock and Dam No. 17 on the Black Warrior about 30 miles west of Birmingham.

The New Hope plant will have installed generating capacity of 80,000 kw, and the other, 22,500 kw; both will have provisions for future units to double capacity.

Technical Approval Given Detroit Airport Project

Michigan State Aeronautics Commission has given technical approval to Detroit's proposed Northeast Airport site in Sterling Township.

But according to the commission, the state cannot make further commitments until Detroit presents a master plan for the development, proof of the need for the type of airport proposed and evidence of financial and legal ability to proceed.

William M. Packer, president of the Detroit Aviation Commission, estimates cost of the airport at about $28 million. "Barring obstacles," he said, "the first plane could land in four years and the field completed within 10."

Col. C. V. Burnett, director of the Detroit commission, said that his organization now would go to Detroit's Common Council for funds to finance the engineering survey required for the master plan. The plan then will be submitted to the Michigan commission and the Civil Aeronautics Administration in Washington, D. C. Both state and federal aid will be sought for the project.

After considering a request from the Detroit commission for technical approval of the 4 sq mi site, the State Aeronautics commission concluded that the site appears to present no major obstacles or unreasonable costs insofar as actual airport construction is concerned. By appropriate alignment of runways and minor alterations in property boundaries, adequate clear zones and approach areas can be provided and the air traffic problems are not of sufficient magnitude to preclude successful instrument operation.

Thus, the state commission accepted recommendation of the State Department of Aeronautics, which made a study of the technical feasibility of placing such an airport with an 8,000 ft runway in Sterling Township.

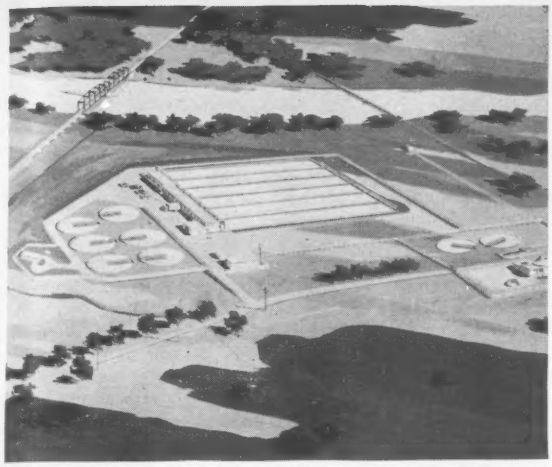
Route Details Are Set For Wilmington Freeway

The Delaware State Highway Department has announced route details for the Adams-Jackson St. Freeway project through west Wilmington.

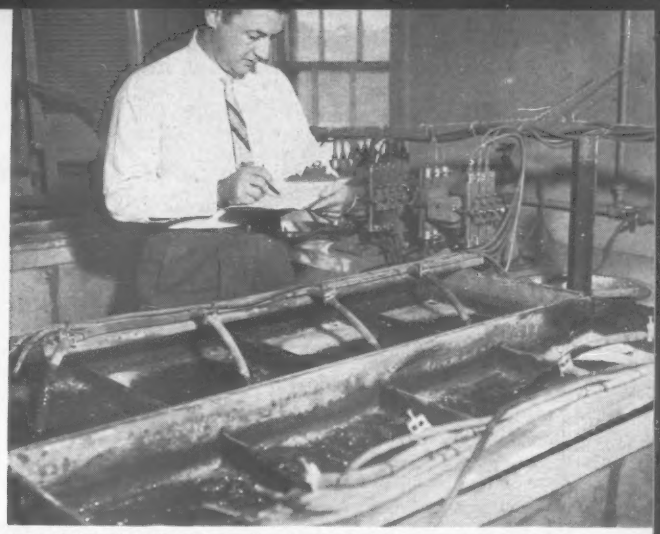
The 6 lane freeway will cost more than $75 million on a federal-state participation basis, with the federal government paying 90%.

The freeway will enter Wilmington from the south as an elevated structure some 26 ft above the Pennsylvania Railroad tracks, and then ease down to 20 ft above the ground.

A total of 652 dwellings of all types will be demolished, and the total assessed valuation of taxable property to be taken over is $3.9 million.



PROTOTYPE is under construction by American Cyanamid Co. to end a lengthy hassle on New Jersey's Raritan River.



IN PILOT PLANT, J. C. Lamb developed unusual activated sludge process for a tough industrial waste.

The Waste That Couldn't Be Treated

The often tumultuous—but always interesting—cleanup of New Jersey's Raritan River is producing still another feature of national significance. It is a most unusual activated sludge plant to handle a complex industrial waste that is not readily amenable to treatment by ordinary biological methods.

The 20 mgd plant, now under construction at Bound Brook on the upper Raritan by American Cyanamid Co., is designed for a 24 hour detention period in the aeration tank. The waste, which combines process, cooling and domestic water from 800 different organic chemical manufacturing operations, contains much material inhibiting biological treatment, no solids to speak of, and an average 300 ppm of biochemical oxygen demand, mostly dissolved.

The industrial facility also will provide secondary treatment to 3 to 5 mgd of primary treated domestic sewage from three nearby communities. These wastes, relatively plentiful in solids, will be of some aid to the activated sludge process but are not necessary for its successful operation, according to American Cyanamid tests.

• **Background**—Since World War II, the Bound Brook operation of American Cyanamid has been a target for criticism by pollution control authorities and other interested parties. Equalizing and neutralizing lagoons built by the company in 1940 succeeded in removing only between 5 and 10% of the BOD as they brought pH of the wastes from 2.0 to 5.0. Under pressure to further reduce BOD of its waste, Cyanamid got itself the reputation as a do-nothing in pollution control by refusing to contract with the original Middlesex County Sewerage Authority in 1952 and by lack of subsequent construction activity while the Middlesex Authority project flourished on the lower Raritan River. In 1953, the New Jersey Department of Health issued a notice for Cyanamid to improve its discharge.

Much of the criticism of Cyanamid failed to consider the complex and, for a time, insoluble problem facing the company. Until 1949 there were many who said its wastes were not susceptible to treatment by biological methods, the only reasonable approach to meet statutory effluent standards. In that year, experiments conducted for the company at the Lawrence Experiment Station in Massachusetts indicated treatment was possible with trickling filters.

Pilot plant operation with a 2 ft dia filter was begun at Bound Brook in 1950 but had not produced decision-making results by 1952, when the Middlesex Authority was being formed. Cyanamid declined to join because it was not sure that its loading (16 mgd of the 50 mgd) was treatable without the company being burdened with a large extra charge, in the form of either extensive pretreatment works or a penalty charge. In addition, Cyanamid always believed it would be better, because of occasional low river flows, to treat at source and put back into the stream rather than pipe wastes to Raritan Bay.

• **Try filter pilot plant**—By 1953, small pilot plant results justified construction of first one 20 ft dia trickling filter and, later, a second unit to permit two-stage operation. By mid 1955, after extensive testing, Cyanamid realized that treatment with trickling filters might not achieve the best possible BOD removal and that a prototype plant of this type would be inordinately expensive. For an influent temperature of 77 F, a BOD load of 40,000 lb per day and a hydraulic loading of 30 mg per acre per day, it would require ten 165 ft dia filters 6 ft deep to achieve a BOD removal of 82% with two-stage operation and a recirculation ratio of 1.4. This removal is without benefit of primary treatment—very little BOD can be removed in the neutralizing lagoon. Four such filters would produce a removal of 52%. The plot of removals and filters is a fairly straight line between.

So in the spring of 1955 American Cyanamid was in a very difficult and embarrassing position. Outside pressure for early construction was mounting; the company had spent about $600,000 on the pilot plant work and still didn't have a practical answer.

• **Turn to activated sludge**—At the suggestion of then recently employed sanitary engineer J. C. Lamb, Cyanamid decided to try the activated sludge process and the small "laundry tub" plant pictured was constructed in the summer of 1955. Results were so good that in November a 40,000 gpd pilot plant was put together using some empty 10 ft dia wooden tanks made available by one of the manufacturing departments. Five months later, results from the larger pilot plant provided the basis for Cyanamid's decision to build an activated sludge plant.

Raw waste from the Bound Brook plant, now averaging 16.5 mgd, has a pH of 2.0 and varies in BOD between 150 and 500 ppm, depending on time of the year. It is pumped from a collection station through a 36 in. wood

. . . Industrial plant will treat domestic sewage

stave pipe into an existing equalization lagoon that provides 12 hours of settling at the 20 mgd design flow. Some acid solids settle out here but primary function is to cushion shock loads.

As waste enters the neutralization lagoon, dolomitic quicklime or acetylene line is added to bring the pH up to the 6.5 to 7.0. After three days of settling (at 20 mgd) about 10% of the BOD and practically all of the suspended solids are removed. Effluent averages 300 ppm of BOD.

In conceiving a biological treatment process for this industrial waste, the time-honored method of investigating each source of waste had to be largely dispensed with. There were 800 sources with numerous interconnections and this job alone would have taken years.

• **The investigation**—The activated sludge pilot plant work was an exceedingly complex job involving determining the effects of aeration time, addition of nutrients to the mixed liquor, temperature, degree of neutralization, sludge return, amount of air and numerous other less important factors. Tests were run with and without a proportionate amount of 3 mgd of domestic sewage from nearby communities.

It was found that 24 hours of detention time in the aeration tank was necessary to build up the optimum floc. With domestic sewage, the suspended solids therein permitted an hour or two reduction of aeration time to achieve the same results. These benefits roughly offset the additional tank volume required for the domestic sewage; 20 mgd of aeration tank would be equally effective for industrial waste alone at 24 hour detention or a greater volume of combined waste at 22 or 23 hour detention. There are small additional operating costs in handling the domestic waste, such as chemicals, air and labor.

Return of all available sludge from final settling tanks to the aeration chambers was found best, since the process can use all the solids it can get. The pilot plant work indicated that no sludge would be wasted in the prototype, but nominal lagooning facilities are being constructed in the event there are small amounts of sludge to be accommodated.

Cyanamid's Bound Brook wastes do not suffer from lack of nitrogen, according to Mr. Lamb. Nutrient problem involves adding phosphorous. In the pilot plant, phosphorous was added in proportions between 1:100 and 1:80 of phosphorous to BOD, the more sludge the less phosphorous. However, more recent studies indicate that operation of the prototype plant may not require addition of phosphorous. Mixed liquor solids vary from 200 to 2,500 ppm, with the better BOD removals associated with the higher solids content.

It was found necessary to add between 2¼ and 3 cu ft of air per gal in the aeration tank, enough to maintain dissolved oxygen content in the mixed liquor between 0.5 and 1 ppm.. Optimum temperature and degree of neutralization were not determined from the pilot plant studies; these await prototype operation. Indications are, however, that biological treatment will be satisfactory at pH even lower than 6.5.

• **Pilot plant results**—Average results, currently obtained in the small pilot plants, are 94% BOD removal with 24 hour detention and 100% of the sludge produced by the process returned to influent flow; 88% BOD removal for 24 hour detention and 75% sludge return; and 83% BOD removal for 16 hour detention and 75% sludge return. These removal data are based on an influent of 300 ppm to the aeration tank. With heavier BOD loadings, percentage BOD removal tends to increase.

• **Prototype design**—Since the larger activated sludge pilot plant bore little physical resemblance to a normal plant, Mr. Lamb and Sheppard T. Powell, who has been Cyanamid's consultant throughout all of this work, attempted to ease the transition to prototype operation by sticking to conventional design, at the same time introducing as much flexibility as possible.

Six 65 x 400 x 16 ft deep aeration tanks, each with two rows of nozzle type diffusers, are being built. Each tank can be described as two tanks with the common wall removed, much as built at the Calumet plant of the Chicago Sanitary District. Diffusers along both long walls will induce a liquor circulation that can be likened to meshing gears.

Influent will enter the tanks over weir plates set in the 400 ft long Y walls separating adjacent tanks. By substituting influent gates for the weir plates, step aeration can be accomplished. Eight equally spaced openings have been left in the conduit formed by the Y walls, making 16 openings through which to feed each tank. Tanks will operate in pairs, liquor flowing down the odd-numbered tanks, back up the even-numbered units.

Should it be desired, sludge reaeration can be accomplished by closing off several openings in the influent conduit near the beginning of the tanks. Tank interconnection channels will be aerated. Air will be supplied from two 25,000 cfm centrifugal blowers.

Additional flexibility has been introduced in the effluent piping to the final settling tanks. Separate pipelines will run from each even-numbered aeration tank, with valving and sludge return piping enabling separate cycle operation between any of the aeration tank pairs and any number of six settling tanks. Thus, if desired for experimental purposes, three entirely separate plants can be operated, with settling tanks divided up two apiece, four-one-one or in any other combination.

Each settling tank will be 80 ft in diameter, with 10 ft side water depth, and will be equipped with vacuum type sludge collectors. The tanks will provide 2 hour detention at the 20 mgd flow at an 870 gpd per sq ft overflow rate.

Cyanamid plans to utilize step aeration for an unusual reason. If and when the aeration tanks receive shock loads, spaced introduction of the influent will result in greater and more immediate dilution.

As far as is known, the 20 mgd plant will be the largest industrial facility of the activated sludge type yet built. Considering its aeration tanks, which are of a size normally found in 120 mgd plants, total cost of $4.5 million, starting from after the neutralization lagoon, is very low. The plant will include a very extensive arrangement of indicating and recording meters but no automatic controls.

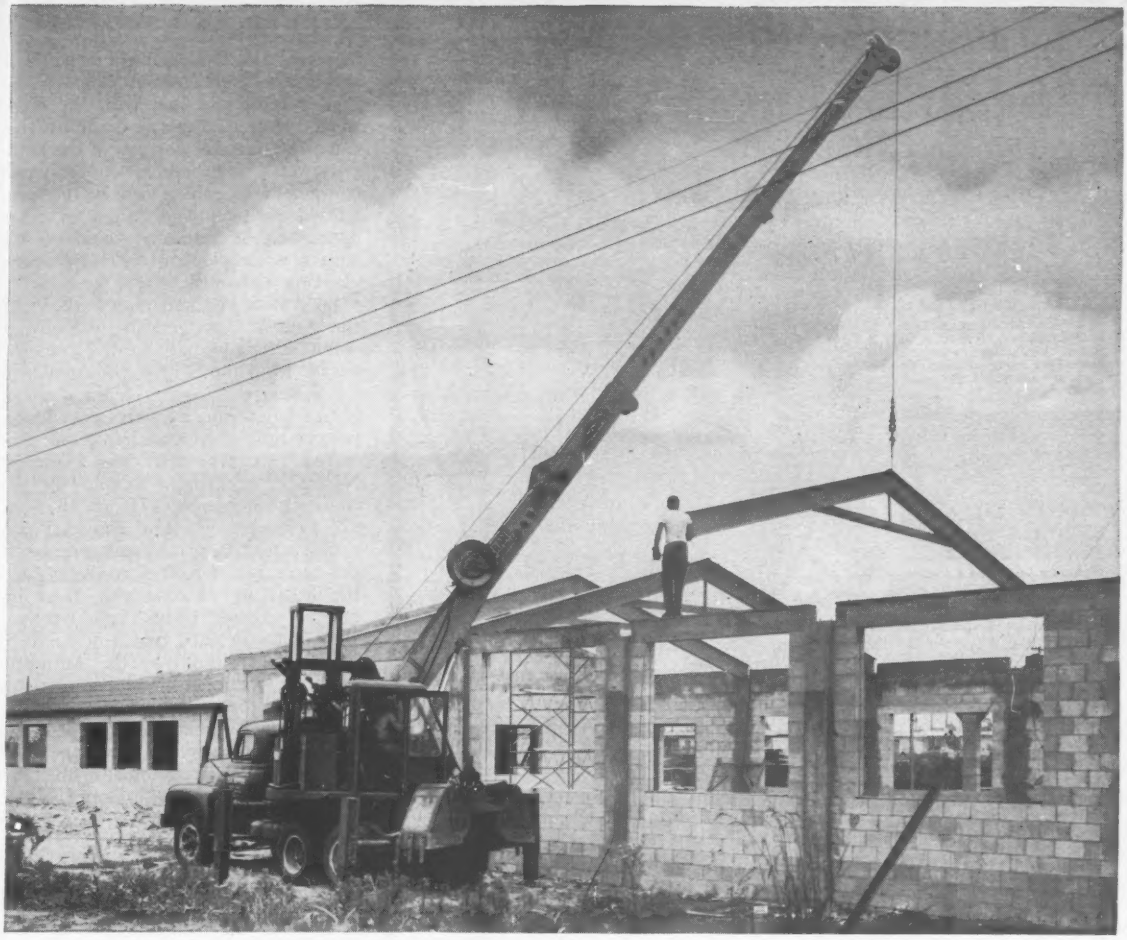
American Cyanamid officials are understandably hesitant about predicting results from the prototype. They are hopeful of matching or even bettering the pilot plant removals, but at present rest their case on representations to the State of New Jersey of better than 80% BOD removal.

State regulatory officials are requiring that when water in the Raritan River reaches the plant with a dissolved oxygen (DO) content of 90% of saturation, the river shall have a DO no less than 50% of saturation at a point a few miles downstream of the outfall.

Flashy flow of the Raritan makes it imperative that waste treatment be reliable. Although flow averages 700 mgd, it gets as low as 50 and even 30 mgd at times, with American Cyanamid pumping 10 to 25 mgd from the stream.

• **Domestic sewage**—When American Cyanamid did not join the original Middlesex County Sewerage Authority, it realized the action made it difficult for the three nearby communities of Somerville, Raritan and Bridgewater to participate in the lower Raritan River collection system because extension of the interceptor for some 3 mgd of sewage was not economically feasible. So as far back as 1952 Cyanamid determined that some cooperative effort was necessary.

Cyanamid was of the opinion that a healthier situation would obtain if the



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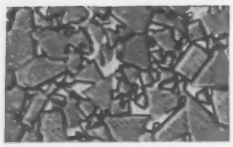

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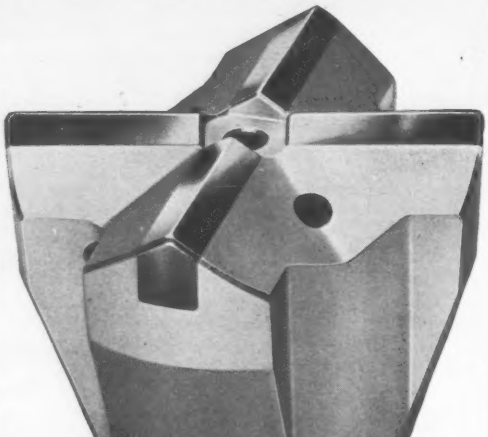

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DST.78

. . . Unusual waste plant

municipalities remained as independent as possible. Yet the company realized that it could not join with the three small towns in a public authority because the financial position of the authority would be dependent on Cyanamid continually furnishing 90% of the load. Should the company curtail or cease operation, the authority would be left with a white elephant of a treatment plant on its hands.

So American Cyanamid worked out the present arrangement whereby it would accept primary treated domestic sewage from the Somerset-Raritan Valley Sewerage Authority for a nominal charge based on extra laboratory labor, power and chemicals (chlorine) involved. A firm offer was made in November, 1955, and accepted by the Authority in March, 1956 (ENR Mar. 22, 1956, p. 25). The applecart was almost upset in subsequent months as the three municipalities re-investigated the feasibility of modifying their individual existing plants. Late last year they finally decided that a new 5 mgd primary plant, built by the Authority adjacent to the new Cyanamid plant, offered the best solution.

American Cyanamid Co. and the SRVSA only last week signed a formal contract, a 20 year agreement subject to termination upon 3 year notice. Thus, with its own plant and a firm agreement with Cyanamid, the Authority feels it has reasonable bargaining power and independence. As already indicated, as far as financial and technical operation alone are concerned, Cyanamid can either take or leave the domestic sewage.

• **Who's who**—For American Cyanamid's Organic Chemicals Division, J. C. Lamb, assisted by L. A. Tucci, A. B. Cherry, G. Sauer and D. M. Aumack, has charge of functional design of the activated sludge plant and its operation.

Plans and specifications for the prototype activated sludge plant were prepared by Whitman, Requardt & Associates, Baltimore, with Roy H. Ritter as partner in charge, under supervision of Cyanamid's Engineering and Construction Division. H. W. Savidge and C. J. Pernal are project and resident engineer, respectively, for the construction division. Cyanamid's noted L. L. Hedgepeth, chief sanitary engineer of this division, also participated in the big Bound Brook investigation.

S. C. Moody, Cyanamid vice president, V. E. Atkins, former general manager of the Organic Chemicals Division, and J. S. Fasoli, legal advisor to the general manager, played prominent roles in negotiations with the municipalities and Authority.

(Advertisement)

Shone Ejectors Operated by Remote Compressed Air Source at Palm Beach

The problem of underground equipment maintenance was skillfully handled by the engineers of the new sewerage system at Palm Beach, Florida. The electrical equipment is housed in centrally located buildings where it is easy to service. The underground sewage lift stations contain only extremely rugged mechanical equipment which requires virtually no maintenance.

The system was engineered by Norman C. Schmid & Associates of Palm Beach and Clifford & Associates of Miami Springs. Malcolm Pirnie & Associates of New York City acted as consultants to the engineers.

Two air compressor stations at ground level furnish power for the 14 sewage lift stations at Palm Beach. Compressed air is piped to the Shone pneumatic ejectors which are located in the underground lift stations. The pneumatic ejectors operate on a mechanical principle which is practically foolproof. Need for maintenance on the valves is very rare. The Shone will even continue to operate perfectly should the entire station be submerged.

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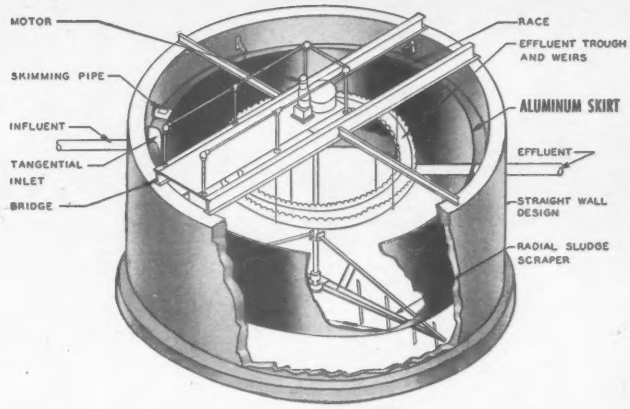

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The County

Thousands of small homes—disconnected, winding, development streets crawling over landscape—almost total absence of open land—That's the problem at a glance for officials at Nassau County, Long Island . . .

Photo by Lockwood, Kessler & Bartlett

That Became a City

Just a very few statistics tell the story of what has happened to Nassau County, at New York City's back door on Long Island. The statistics tell a story that's close to typical for suburban areas surrounding most large U.S. cities.

But Nassau County is larger than others in most respects, except physical size of the area. Its boosters proudly proclaim that it is the fastest growing area in the United States. Its detractors (and some of its older residents) look with considerable horror on the influx of population that has converted almost every inch of once prosperous farmland into densely built housing developments. Its public officials and its engineers look on the problem with no horror—but with a keen appreciation of the job they must do to keep this vast community operating.

Look at the figures:

- **The County has an area of 315 square miles, of which 39 square miles are under water.**
- **Within that area are a total of well over 14,000 miles of paved road.**
- **Within the 17 years, 1940 to 1957, the population has increased by a whopping 208%, to its present level of more than 1,300,000 persons**—a population larger than some 14 states and which would rank the county well up in the list of major cities.
- **Within 11 years, a total of 184,496 one-family and 12,677 multi-family units have been built.** In addition, 5,500 stores and one-story business structures have been erected, as have 1,187 industrial buildings.
- **The assessed valuation of the County is now $2.5 billion—compared to $1.3 billion in 1940.**

And within its relatively tiny area, Nassau County has quite literally several hundred governmental units—some of them dating back to the days of British rule in North America—piled one atop the other in almost ridiculous confusion.

• **Much government**—This enormous multiplicity of governments is a thing that must be understood in order to appreciate the problems facing the county's officials in attempting to do anything on an overall basis.

One of the oldest sectors of the United States—with settlements dating to within a few years of Pilgrim landings in Massachusetts—Nassau's governmental setup is based on the old English county and town system. Land titles and laws, in fact, had gotten so complicated even in the time of the American Revolution that many of the rights and duties of local officials—and most land titles—were simply incorporated into state laws with little change.

Thus, the county is subdivided into three townships, two cities (Glen Cove and Long Beach), some 63 villages, and innumerable school, fire, paving, sewage, curbing, lighting, drainage and other districts. Most of these subdivisions are run by elected officials; have taxing and regulatory powers in varying degrees. Their activities must be coordinated somehow, lest even more confusion result.

At the top of the heap—by virtue of a special state charter that set up Nassau as one of three New York counties with a county manager form of government—stands the county government. It is headed by the County Executive (A. Holly Patterson, an attorney) whose position is probably closer to that of mayor of a major city than any other post. An elected official, he is the executive head of the county government, but is also chairman of the Board of Supervisors—the major legislative body.

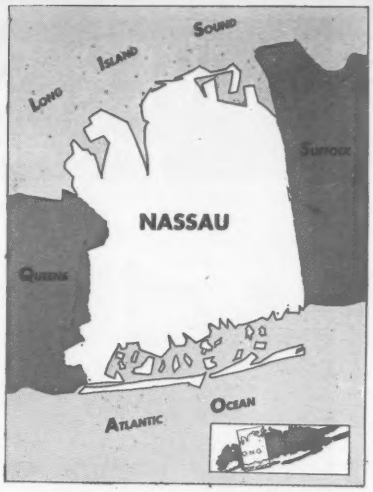
To the county executive now report the appointive heads of the county's major departments—Police, Purchasing Agent, County Treasurer, the Commissioner of Public Works and others.

Also reporting to the Executive and to the Board of Supervisors is an independent organization known as the County Planning Commission, which carries its own engineering staff and controls land use within the area.

The Public Works Department, limited by law as to its authority, is blocked from entering certain functions exercised by the villages and by the State of New York. However, two of its principal activities—that of drainage and sanitary sewers—do overlap these smaller units.

But the planning commission, working as an overall county organization, can and does use its powers in an attempt to see to it that housing development programs are somehow coordinated with each other and with overall problems in which the entire community is vitally concerned.

• **Drainage is key**—For Commissioner of Public Works John C. Guibert (who also bears the title of County Engineer) and his 1,600 man department, as well as for the planning commission, probably the central focus of the county's engineering work is on drainage. It is at this point, incidentally, that the Public Works Department can enter even the most sacred precincts of the villages in order to obtain the best possible results.



The question of drainage is closely related to the geological character of Long Island—a 120 mi strip of sand and gravel running almost due east from Manhattan Island. At its widest, the island is about 16 mi wide. Outside of a few springs, there are practically no natural watercourses, and for drinking and industrial water it depends on a huge lens of underground supply that is replenished by rainfall.

The island is a glacial moraine with a terrain that starts on its north shore from fairly high sand and gravel bluffs —running as high as 400 ft above sea level—and tapers off to a deceptively flat plain that gradually goes downward to sea level on the south side. This plain, which constitutes more than half of Nassau County, has long since been cleared of most of its trees for farming, and is run through with a series of small folds in the land, almost imperceptible to the eye, and varying in depth from a few inches to a few feet. These tiny gullies for many years served as run-off channels for the heavy rains that hit the area occasionally in summer. Long Island had no particular drainage problem then.

• **Basins now needed**—But the vast urbanization of the area brought with it a double problem: An immensely increased demand for drinking and industrial water plus the "roofing over" of enormous square footages of land, with paved roads, driveways, sidewalks, houses, garages, industrial buildings.

The result was a greatly increased runoff, with no place for the water to go. This situation was aggravated by the increased drawn-down on the underground water supply, and it added to the perennial problem of road maintenance as well as maintenance of other public utilities in the streets.

The answer to this problem has been a program of storm water drainage

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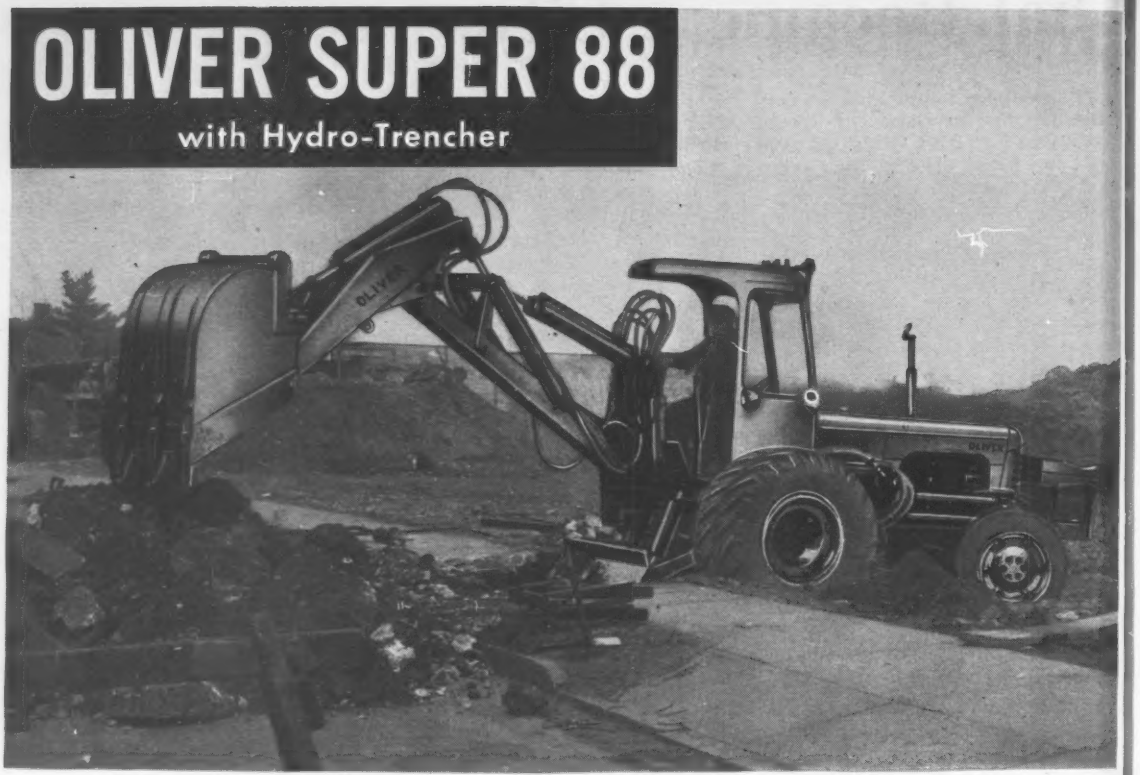

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Ripping up concrete pavement after use of air hammer is only the start of this tough assignment. With chopping action of hoe bucket the Super 88 loosens and digs rock. Dual hydraulic controls and 180° swing provide a fast cycle.

Nick Garito of Larchmont, N. Y., doesn't mince words about the performance of his Oliver Super 88 with Hydro-Trencher.

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Another plus value is the ability of the Super 88 to work in tight places where other machines can't maneuver. "My Oliver Super 88 has been so outstanding that three other contractors in the area have bought Oliver 88's," says Nick Garito.

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. . . Developers handle streets drainage

COUNTY ROAD is in reality a city street. Widening involves putting 6 in. concrete base slab atop compacted gravel, topping with asphaltic concrete, relaying utility lines, and—as in any city—removing structures that block the way.

basins which is now claimed to be the largest such program for any area in the United States. Starting in earnest only about 10 years ago (although the first experimental basin was built as long ago as 1928) Nassau now has more than 400, the smallest of which is about 150 ft square, the largest 22 acres in area.

Their positions are carefully engineered with relation to nearby drainage areas and also in regard to other basins.

According to Mr. Guibert, the average cost of such a basin in a subdivision is about $20,000—including the required chain link fencing, but not including the cost of land. The Public Works Department estimates that in 10 years the county has obtained—through requiring the development contractor to put in the basin and then dedicate it to the county—well over $8 million worth of such basins, at no cost.

• **Reasons and results**—The Public Works Department says it has three reasons for using the storage basins: To dispose of storm water immediately; to cut the cost of over-all drainage to the county; and to re-charge underground supplies.

Here's how the basins are obtained:

A developer—having bought a piece of land on which he intends to build houses, stores or an industrial building—must present plans for his proposed development to the County Planning Commission, which checks them for conformity with zoning regulations, traffic patterns and other matters, and calls in the Public Works Department on the problem of drainage.

Public Works, through its drainage section, establishes line and grade for all the streets in the proposed development, and approves the developer's plans for required storm drainage piping in these streets. This pipe, incidentally, is required to be adequate not only to take care of storm runoffs from the development in question, but from other lands adjoining, which may drain into the development area. Thus, it has happened often that although a 42 in. pipe might be adequate for his project, the builder has been forced to install—as a joint venture with the county—a 72 in. pipe in order to provide for future development above him. Costs are proportioned and shared. However, this requirement is responsible for permanent paving of the development streets, with no necessity for tearing them up to accommodate later construction.

Additionally, the drainage basins themselves in some cases were designed in such a way that if they fill up too fast, either because of a very heavy rain or because of poor absorption in the ground under them, they will overflow into the streets, which act as conduits to carry the overflow water to the next basin, which is designed to be a bit lower than the first. Newer basins are interconnected with overflow pipelines.

• **Waterways too**—In maintaining these basins, the DPW leans heavily on its mosquito control unit, which takes periodic samples of every basin to decide when cleaning or other treatment is necessary to prevent breeding of insects. In addition, the department's maintenance division does such physical maintenance as may be necessary.

The basins are not the only means of drainage control. The department also has taken advantage of what natural water courses exist—mostly on the low-lying south shore—to handle storm water. One example is the so-called "branch area" in Cedarhurst (very near the New York City line) where Cedar Point Lake is controlled by tide gates and pumps to maintain a constant level, despite heavy inflow of storm water.

Incidentally, several of these developments have led to development of parks and recreation areas around ponds either created or cleaned up and maintained primarily for flood control.

In addition, Nassau also acts as a consultant for the two state agencies that have highways within the county's limits—the Long Island State Park Commission, and the State Public Works Department. Drainage systems for these highways are closely tied to the county's overall system.

• **Developers pay freight**—A lesson learned out of hard experience by the county officials is included in the statement that "the county forces the developer to install drainage systems."

As a matter of fact, the county not only requires the developer to install drainage systems, but it also dictates that he must put in paved streets with line and grade and pavement to rigid specifications, and must, in addition, dedicate certain areas of his development to the county (or the village or other governmental unit) so that future widening of the artery can be done if that should become necessary. And it is also required that the developer install curbs and sidewalks throughout his development.

To guarantee performance on this requirement, the county, town, village or other agency involved now requires that developers post a bond for a full 100% of the cost of all improvements, the bond being released only on acceptance of the completed work.

This requirement has been reflected to some extent in higher house cost to the individual buyer, but it has without question saved the county millions of dollars in added work that might have otherwise been required.

Incidentally, the requirement that the builder dedicate 10 ft or more of right-of-way on either side of the roads in his development has resulted in some peculiar highway situations. In some places a paved road passing older and undeveloped property may be only 24 or 25 ft wide, then suddenly blossom into a 50 ft pavement as it passes a new development; then it will narrow down again to go by older property a second time. However, the requirement has given the local officials a chance for proper development of roadways wherever the new developments have gone in—and that includes practically all of the county except its northeast corner where many large estates are still maintained.

(*Continued on page 34*)

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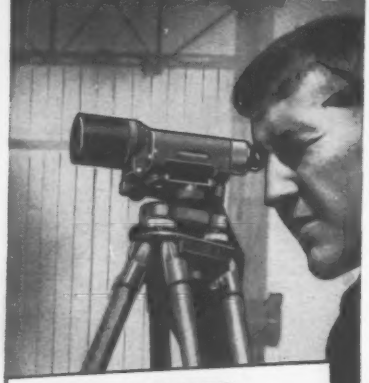

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. . . Area leads in groundwater recharge

DRAINAGE basins are principal means of disposing of storm water runoff, recharging underground water supply. Developers must build basins to county specifications.

The county is responsible for maintenance in all its phases on some 410 mi of highway.

However, all resemblance to normal county highway maintenance work is coincidental. In effect, the Road and Bridge Maintenance Division, under the direction of Leslie Lewis, is a city street department much more than a rural roads organization. Almost all of the county highways are main streets of the numerous communities.

In fact, some of the duties of the maintenance division are concerned actually with street cleaning operations. (In the population center of Hempstead, the county highway is, in fact, the main street of the business community.) The maintenance division has among its equipment several mechanical brooms, striping machines, patrol graders, 75 to 80 trucks up to 10 tons which are equipped as snowplows as well as for haulage and a number of hand brooms for local work.

Under the rigid specifications enforced by the county, all roads in developments—although these are normally dedicated either to the village in which the development is situated or to the town—are required to have 6 in. of pavement for the full width between curbs. It consists of 4½ in. of stone base, with a 1½ in. wearing course—all bound with bituminous material.

Main county-owned and maintained roads are now being built to a standard of an 8 in. concrete base placed over compacted gravel then covered with a 2 to 3 in. asphaltic concrete wearing surface. The county has adopted this form of paving for several reasons, one of them, importantly, being that it feels that the asphalt wearing surface cuts down on the noise level produced by vehicles on the roads.

• **Shoulder maintenance**—At present, of course, there are many older streets which are paved with concrete or which are simply built up layers of penetration asphalt. These are being slowly replaced, widened and resurfaced as county funds become available.

However, the highway program of which Nassau is proudest is its concentration on shoulder stabilization.

At present, there are practically no roadside ditches left. Engineers have long since abandoned this method of carrying off surface water, preferring instead to use curbed gutters, conducting the water to sumps from where it will flow to the drainage basins. Elimination of the roadside ditches also has eliminated a traffic hazard.

The shoulder stabilization program has achieved a number of things:

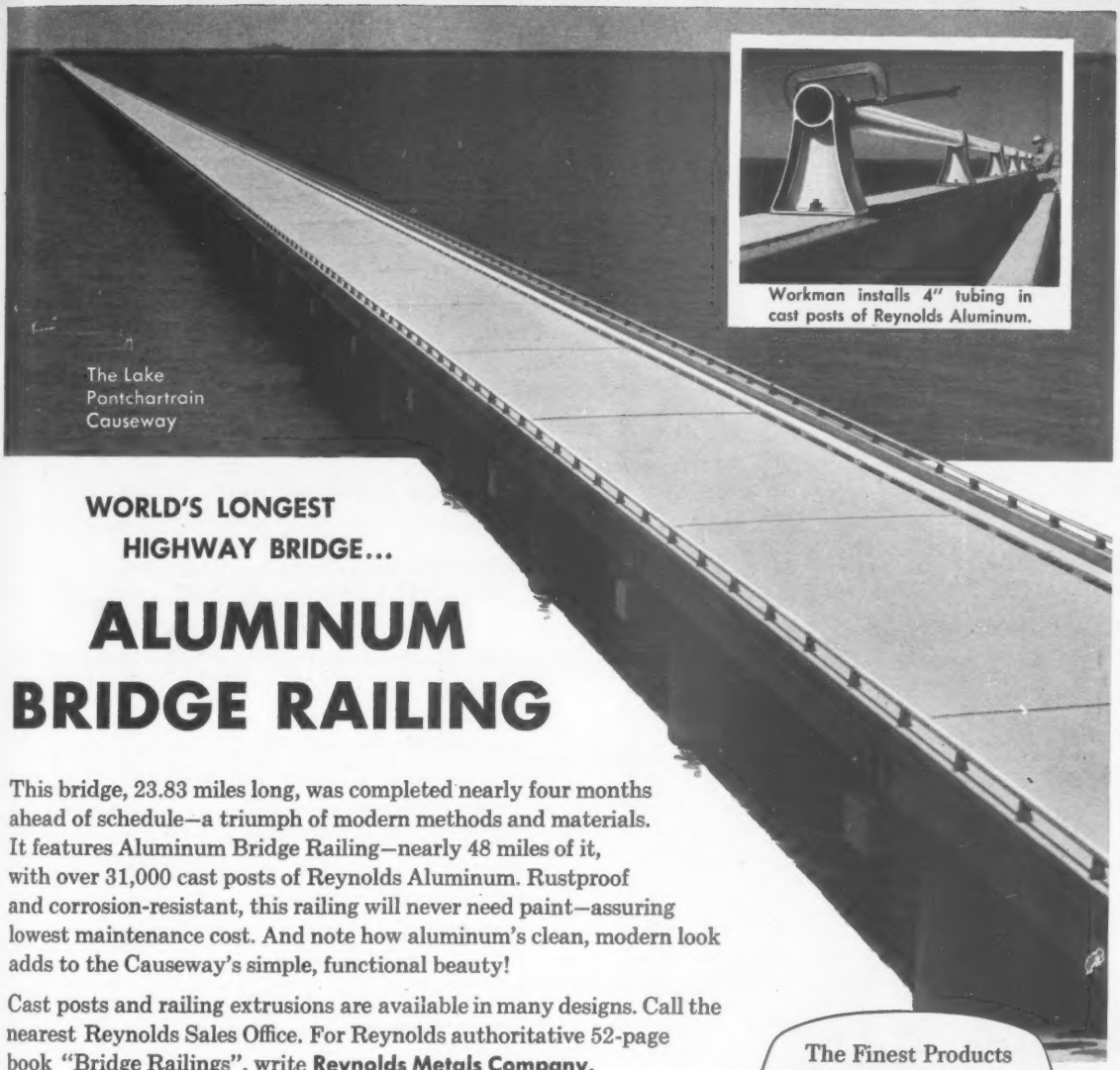
- It provides a cheap means of widening a road for emergency use, thus increasing its life and usefulness;
- It practically eliminates annoyance to householders from dust;
- It is a major factor in preventing the raveling of the roadside edges and in conducting run-off water quickly from the road to the drainage areas.

The shoulder stabilization is usually done by excavating the shoulders, where unsuitable material is present, and replacing it with gravel and finishing with a penetration shot of asphalt and then stone chips, rather than gravel.

• **A maze grows**—However, one of the problems that neither the Public Works Department nor the Planning Commission has made too much headway against is the growing maze that the various developments have made of Nassau County.

It is not a very funny joke to many officials—including fire departments and letter carriers—that it takes longer to go from one neighborhood in Nassau County to another a mile or two away than it does to get from any place in Nassau County to New York's City Hall on Manhattan Island, fifteen or twenty miles away.

With the exception of a community like Levittown, with its some 17,000



Workman installs 4" tubing in cast posts of Reynolds Aluminum.

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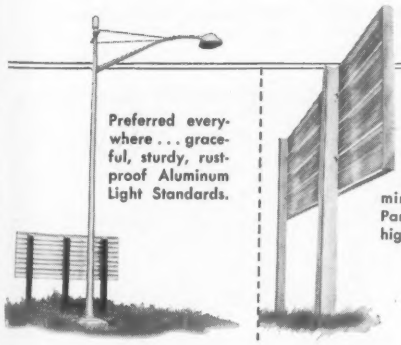

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. . . Street patterns that form a maze

NEW DEVELOPMENT begins on slight hill, land clearing reveals another development of split-level homes just below. Streets and drainage must be coordinated for both areas.

houses, most of the developments in Nassau County have been made on farm acreage of anywhere from a few acres to 30 or 40 acres.

Each developer not only exercised his own fancy and that of his engineer in obtaining the greatest possible number of lots out of the area which he had bought, but he also exercised his fancy as to the naming of the streets—after favorite aunts, old family retainers and the like.

Further, development of theories concerning street layout for residential development have resulted in a pattern of streets which do not intersect other streets, and in cul-de-sacs or circles. These are wonderful from the standpoint of the residents of any given street in that there is no through traffic and thus considerable safety for pedestrians as well as for children at play.

However, the result has been a crazy quilt of streets winding in every direction and sometimes in two or three directions that have little relationship to each other. Thus the only way to get to vast areas of the county is to go down the relatively few older streets which now act as collector avenues, find the development sought and then work through the maze of winding streets and houses until the proper address is found. In recent years, at least one connecting street has been required on all four sides of a development.

In the picture on page 30, for example, it is virtually impossible for a householder who lives in the upper right-hand corner of the area to visit a friend in the lower left-hand corner without driving literally for miles to reach a street which will take him to his friend's home.

This, plus the fact that the streets are neither named nor numbered in any pattern at all makes street addresses meaningless for visitors and requires that householders expecting guests almost invariably draw complicated maps so that their friends can reach the premises.

The problems for anyone trying to make a delivery in such an area are obvious at once and, in fact, many of the local fire departments are compelled to maintain maps of their areas, keyed in sections so that they can quickly find the location of a fire and the best possible route for reaching that particular location.

This situation has been further complicated by the crisscrossing of the county by major highway systems, many of which—like the Northern and Southern State parkways—are limited access roads which provide no local communication connections.

• **Endless challenge**—Nevertheless, the county officials represented by Mr. Guibert and his associates accept this problem as a major challenge to their ingenuity in making things work.

"These people came here to find homes and a way of life," comments Mr. Guibert philosophically, "and it is our business to see that what they sought isn't lost . . .

"They bring with them many problems." he added. "For instance, many of them have come directly from a lifetime spent in New York City, where such problems as street maintenance, drainage and the rest were of no concern to them at all, and they have often sort of expected that the County Department of Public Works will act as their janitor and general fix-it department. Of course, we can't do this to the extent even that we might like to do it, but we have found that within a few years most of them are very eager to accept their civic responsibilities and work with us to help the situation.

"Meanwhile, our big job is to see that this community of ours works, is safe to live in and safe to move about in."

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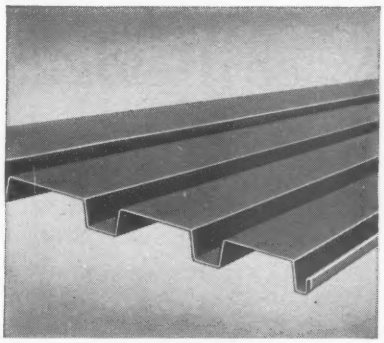

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BARGE equipped with a jacking assembly places, then strips forms for girder and deck of post-tensioned concrete structure.

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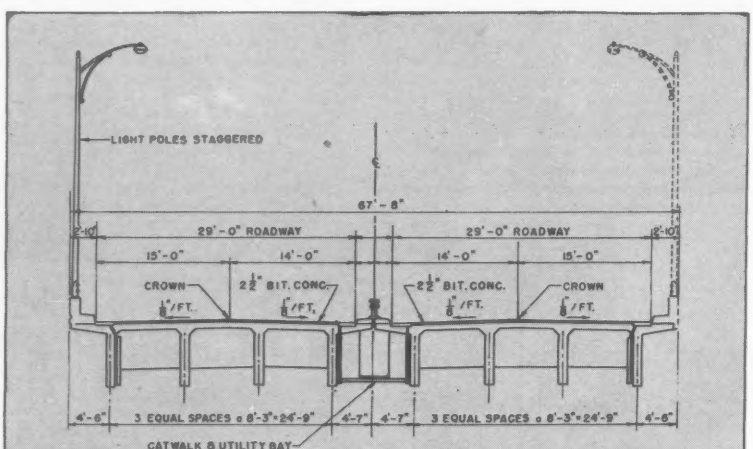
Prestressed Bridge: A 120 ft Span Er

Prefabrication of reinforcing cages and in-place fabrication of prestressed beams speeds construction of a 1,677 ft long highway bridge over the Connecticut River near Hartford



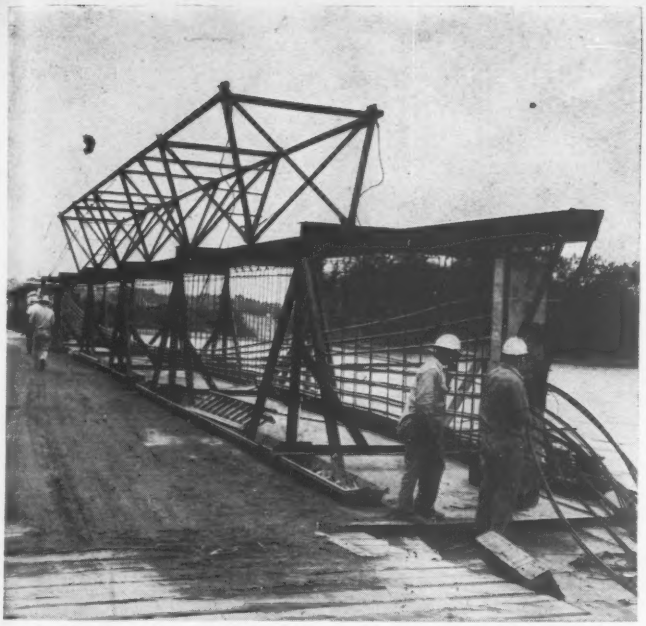
BRIDGE will carry heavy traffic to and around Hartford, hence the wide roadways provided. Sidewalks are for emergency use.

Clever casting and a simple, straightforward design have combined to produce a cast-in-place, prestressed concrete bridge over the Connecticut River that is being built at a rate far faster than anyone seemed to think would be possible. Scheduled completion date is Dec. 31, 1957.

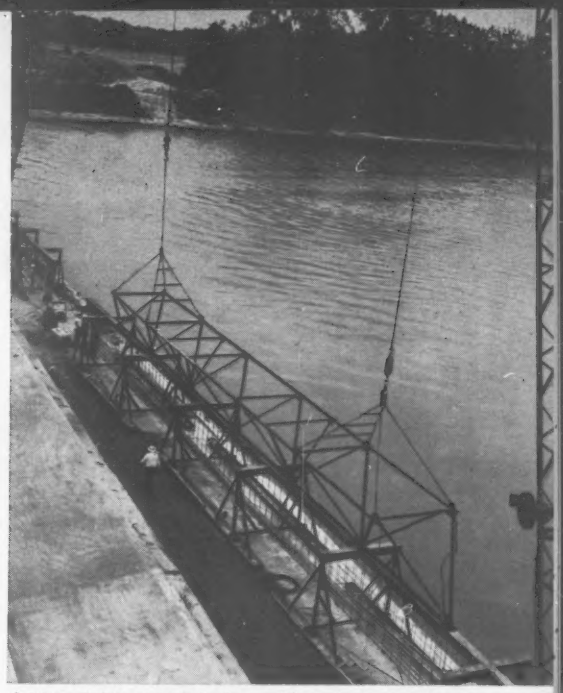
The 120 ft long (center to center) post-tensioned concrete spans are being erected at the rate of one full span —eight girders and deck—a day, through a combination of contractor methods that make possible the casting of deck and girder in one operation.

The bridge is the 1,677 ft (abutment to abutment) Wolcott Ave. crossing, being built for the Greater Hartford Bridge Authority, at a point about four miles north of Hartford's city limits. The structure will be a principal link in a new Connecticut Route 6 bypass to the north of Hartford, connecting Route 5 on the east and 5A on the west side of the stream.

Designed by the Boston engineering firm of Thomas Worcester, the structure will stand on 13 reinforced concrete piers, the first 12 (from the west side), being placed 120 ft on centers, the last, 118 ft 9 in. As designed, the bridge itself consists of post-tensioned concrete girders, eight to each full span, on 8 ft 3 in. center-to-center spacing,



REINFORCING CAGE for 120 ft long girder, complete with stressing wires inside flexible tubes, is fabricated alongside bridge.



COMPLETED CAGE built on job-made truss, gets a two-crane pickup for lift to forms on bridge deck.

Erected Daily

carrying a 68 ft wide, 7¼ in. thick reinforced concrete deck that will be finished with a 2 in. asphaltic concrete wearing surface. The bridge will provide a 50 ft clearance above mean water, although there is no shipping in the river at this time.

The foundation on which the bridge spans are supported are of reinforced concrete, elliptical in shape, 81 to 87 ft long and 16 ft wide. These foundations carry piers 6¼ ft thick and tapering upward to a 45 ft average height at ¼ in. to the foot. The structure will provide two 29 ft wide roadways, with a 4 ft wide median strip.

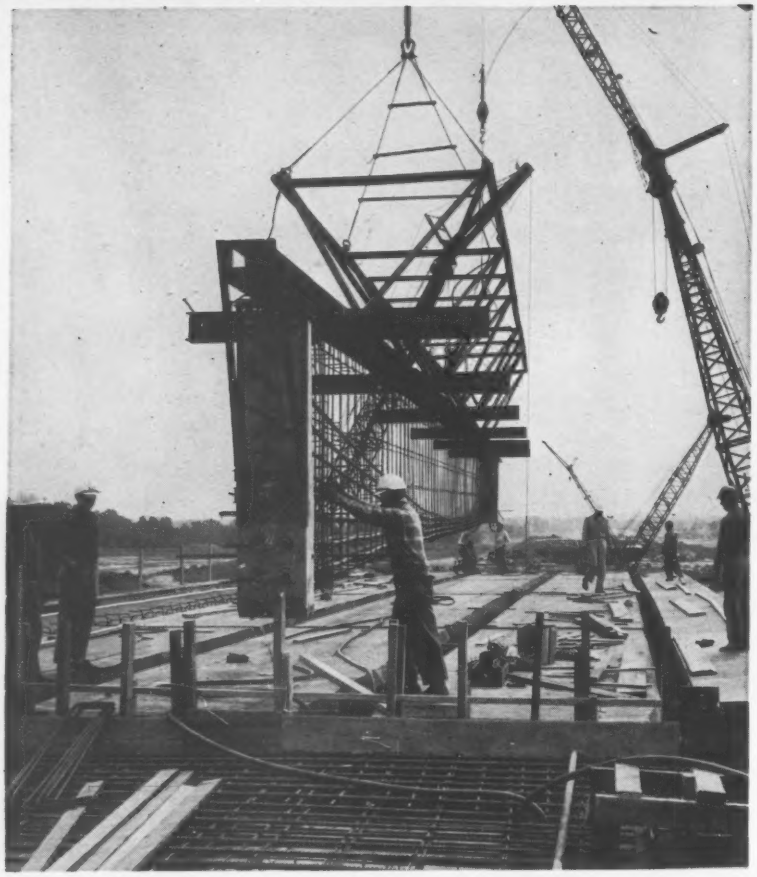
• **Do it dry**—To Gordon C. Linberg, project manager for Merritt-Chapman & Scott (which holds the $3.5 million contract for the entire structure) the problem of putting in the foundations and erecting the deck resolved itself into two parts:

Getting the foundations in with land-based equipment if possible; and devising methods of erecting the deck and girders with the least possible time and labor cost.

An old hand with the Connecticut River—in previous jobs Gordon Linberg had a large hand in several bridges across the stream—his answer to the foundation problem was to build, quite

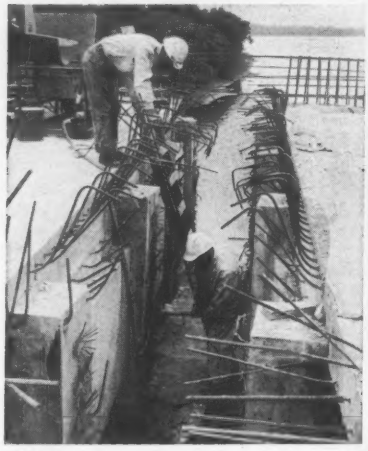
SWINGING OVER to clear formwork for bridge deck, cage shows precast concrete end block that will hold wires during stressing.

. . . Earthfill road keeps work dry



EASILY GUIDED by workman, cage is ready to go down into slot prepared for it in deck forms. Reinforcing on adjoining span (foreground) is ready for concrete.

GOING DOWN into one foot wide slot, placement calls for coordination.



GROUT goes into the stressing cable tubes, after tension has been applied.

literally, a road across the stream. The river is extremely shallow at this point, particularly in the present drought year, with a depth in the meandering "channel" of less than 8 ft.

An earthfill construction road was pushed out from the west bank of the river for a distance of 300 ft. From that point, a series of steel barges bridged the remaining water to the opposite shore. Using this road as a base for operations, cranes, trucks and other equipment could be brought right up to the point of work. However, two floating rigs did the pile-driving for the piers.

• **Piers and foundations**—All of the river piers (except two on rock) stand on steel H-piles, driven through the sand, silt, gravel and into reddish shale.

An immediate problem presented itself in that the design called for piles on a batter in two directions and then vertical piles in the center, to support each pier. Mr. Linberg found an answer by constructing a jig in the shape of a right angle triangle, with its shorter side mounted on skids that could fit within the area of the pile cap.

The jig, built of 4 in. pipe, had one vertical side, and one side at the proper angle of batter for the side piles. It was built as a series of five bays, in such a way that the pile hammer could be laid into one of the bays, atop a pile, and worked within the bay if it were within the driver leads.

Piles then were placed in the bays, the hammer was dropped over them by a crane, and driving proceeded. When one pile had been driven well into the river bed, the hammer was lifted into the next bay, while workmen spliced a new section to the first pile. The vertical side of the jig was used in the same way.

With the pipe piles in place, sheetpiling was driven to make an enclosure and the piles were capped and the cap brought above water for construction of the piers. The solid piers are faced at upstream and downstream ends with cut granite blocks.

• **Put in the girders**—For the casting of the girders and the deck, the superintendent again reached into his bag of tricks.

The post-tensioned girders are each 116 ft long, 12 in. wide, and 6 ft 4¾ in. deep. The design calls for post-tensioning with twelve strands of wire, using Freyssinet-type cone jacks.

His approach was to divide the problem into two parts—the reinforcing wires and the girders themselves, and the formwork for the girders and the deck.

The first part of the problem was solved by constructing reinforcing cages for the girders, on the construction roadway. A lifting frame, made up of steel angles, was fabricated on the job, provided with a series of job-made hooks from which the light reinforcing cage could be hung for fabrication and erection.

The cage is constructed to include two precast concrete end blocks—also cast on the job—through which armored cable coverings are drawn through the reinforcing bars to assume the proper drape. The strands of tensioning wire

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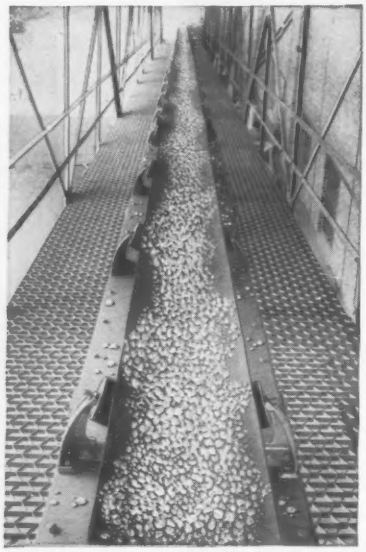

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. . . Girder concrete is revibrated

CLEAN appearance of underside of span is one result of "one-piece formwork used in construction. Full span is made up of eight girders.

then are pulled through these armored cable coverings, and the cage is ready for insertion in the form.

Meanwhile, the contractor also had constructed a steel truss falsework span, made up of 14 WF 73 beams at top and bottom, to be supported by similar beams placed vertically on the shoulder of the bridge piers.

These carrying truss assemblies become a base on which to support the formwork for the entire deck structure. This is made up in solid plywood forms including 6 ft deep slots on 8 ft 3 in. centers that will become the carrying girders.

With the form in place and the cage ready, two cranes pick up the roughly 10 ton weight of the reinforcing cage and wires, and set it into the narrow slots in the form.

• **And so to work**—As soon as the girder cages are placed, workmen install the diaphragm and deck steel. Then truck-delivered concrete is lifted to the bridge deck by bucket and placed.

The first cast fills the girder slots, concrete is vibrated and, in Linberg's words, the crew "knocks off for lunch."

After about an hour and a half, the concrete in the girder members is revibrated. (A retarding agent is used in the concrete, to permit this revibration.) And the entire deck slab is then cast in place.

Once a section has been cast, operation on that particular span is suspended for two days, until the concrete has reached a strength of 3,000 psi.

Then, eight of the draped wires are stressed, and the steel truss falsework below the form is released. The falsework has deflected about 2 in., according to plan, in order to prevent too much stress on the girders. With the falsework released, the remaining four strands are stressed and the job is finished. Final tension in the cables is 148,000 psi.

According to the contractor, within five to six days after this stressing operation has been completed, the span is strong enough to permit trucks and cranes to run out on it to work on other parts of the structure.

• **Take it away**—Releasing and shifting the forms has also been highly mechanized.

Driving a Pile Every 5 Minutes with a

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In laying a 6-ft 6-in sewer line in Mount Royal, Quebec, Spino Construction and Equipment Ltd. sheeted more than 2,000 ft of trench 30 ft deep through asphalt and clay at an average rate of 100 piles per day. A McKiernan-Terry 9B3 Double-Acting Pile Hammer provided the powerful blows that enabled them to do the job so speedily and effectively. A McKiernan-Terry E4 Double-Acting Pile Extractor was later used to withdraw the piles.

You, too, can be sure of similar, quick pile-driving operations, whatever the type of job, kind of piling or character of soil, if you use a McKiernan-Terry Pile Hammer—the choice of contractors all over the world for large and small construction projects.

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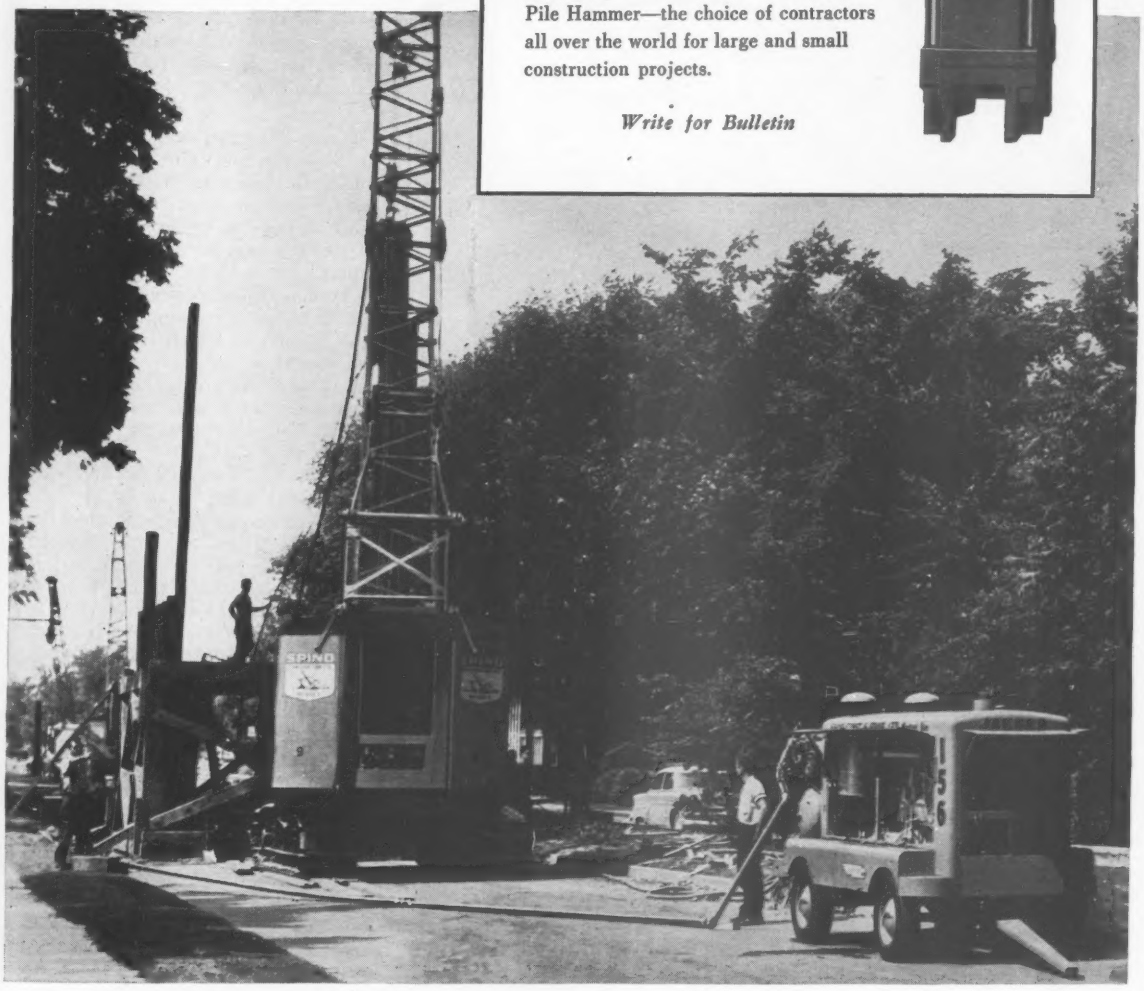

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Granco "Weld-Shear" test puts failure loads on a test-floor section. Result: Safer design standards for the construction industry.

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Like to see results of this test? Send for free copy of Granco's "Weld-Shear" data today —another tangible example of continuing Granco research that leads to better products for the construction industry.

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. . . Forms floated

TWO HALVES of span meet at center in tapered section. Median strip and railing will cap joint and utility bay.

A special barge, with an H-beam and jack assembly on its deck, is used for the removal operation. The barge is floated under the span until its lifting mechanism is located directly under the carrying trusses and the jacks are adjusted to take the load from the vertical stub beams.

As soon as this operation is complete, a series of 5 ft long, hinged knees in the stub beams are folded up so that the full weight of the forms now rests on the barge. Jacks on the barge assembly now lower the trusses and form work several feet in order to get clear of the bridge girders, and then the entire assembly may be moved out and placed on the next span.

The contractor has built a total of four carrying truss and form assemblies, each one of which is complete for a full half span—that is to say, four concrete girders and the deck.

• **Credits**—The structure is being built for the Greater Hartford Bridge Authority, for whom the New York consulting firm of DeLeuw Cather & Brill is acting as inspecting engineer. The Preload Co. of New York has acted as a consultant to the contractor on girder and deck design.

William H. Putnam is chairman of the Greater Hartford Bridge Authority, Edwin S. Burdick is chief engineer. John Makaretz, chief structural engineer for Thomas Worcester, was in charge of bridge design. Construction is under the over-all supervision of Burl A. Wilder, general superintendent of the Merritt, Chapman & Scott's Hartford Division. Clarence B. Sharp is consultant for the construction design methods used.

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TAKING HAZARDS OUT OF A HILL

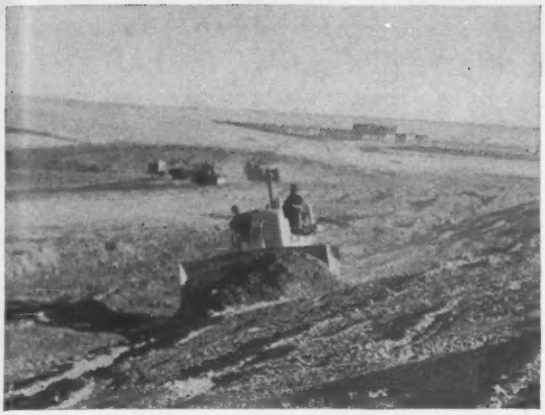
$1,259,962 project to provide a safer approach at Ellsworth Air Force Base is speeded to completion with Caterpillar-built equipment

One of twenty Caterpillar-built rubber-tired units engaged in the elimination of a hill at Ellsworth Air Force Base, this two-wheel DW21 Tractor with Scraper speeds glacial till to the waste area.

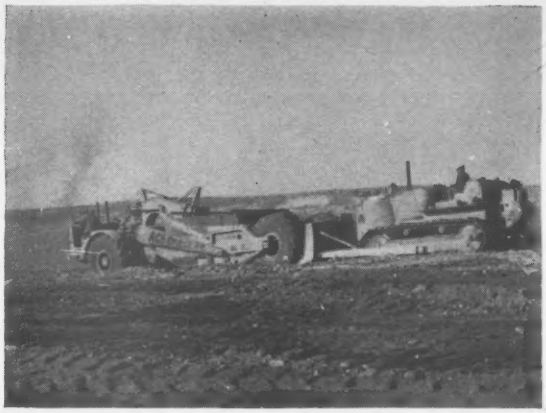
With B52s scheduled for operation from Ellsworth Air Force Base, Rapid City, South Dakota, the NW-SE runway is being extended 3,000 feet. To permit a flatter, safer approach, a hill about a mile from the runway's northwest end is being eliminated. Although not very high, this hill had claimed two aircraft.

The $1,259,962 contract for the approach zone grading was awarded to C. F. Lytle Company, Sioux City, Iowa. It involves moving almost five million yards of glacial till from the hill. This will open a cut 35 feet deep on a maximum of 1.5 to 1 slope to a point 4,500 feet from the end of the runway, then falling off to a 2 to 1 through the remainder of the cut. It fans out from the end of the runway to 3,000-foot width at the end of the cut. The side slopes are trimmed back 7 to 1.

To speed up the work, Lytle subcontracted half the project to Ace Construction Co., Omaha, Nebraska. The center line of the runway was ex-



Besides cleaning up slopes, this D8 is used for utility, 'dozing, spreading fill, etc. It is one of five husky D8s on the job.



Forty seconds for a heaping load is the average loading time in good going for this Cat D9 Tractor pushing a DW21 unit.

A four-wheel Cat DW20 Tractor with Scraper hustles back from a haul over road maintained by a No. 12 Motor Grader.

tended through the cut. Lytle is working the north half; Ace, the south half. Both contractors work two 10-hour shifts per 6-day week. And both rely heavily on rugged yellow machines for high production.

B. D. McMillan, project superintendent for Lytle, has an equipment line-up that includes ten Caterpillar* DW21s with Scrapers, four D8 Tractors and two No. 12 Motor Graders. The DW21s are loaded on a five per cent grade, then speed an average of 2,400 feet in fourth gear to the waste area on the far side of the hill. The waste is spread in one-foot lifts and compacted by the heavy rubber-tired scrapers rolling across it. One D8 is used for push-loading and the other three D8s for sloping, clean-up, spreading fill and pushing when needed. The two No. 12 Motor Graders keep the roads bladed down.

On the south half of the cut, Ace's project superintendent Don Haugan uses five CAT* DW20 and five Cat DW21 Scrapers on an average 2,600-foot haul to the waste area. Three giant D9s push-load the scrapers. Loading times vary with conditions. In good going, a D9 gets a scraper off with a heaping load in 40 seconds. A D8 does utility 'dozing, cleans up slopes, spreads fill and rips with a Cat-built Ripper when the glacial till is too tough to load. A No. 12 Motor Grader maintains the roads.

On jobs like this, and on every type of earthmoving, contractors find that standardization on Caterpillar-built machines pays off many ways. Maintenance is simplified. Operator familiarity with similar units results in higher production. The interchangeability of many parts reduces inventory requirements. And "one-stop" service by the nearby Caterpillar Dealer helps lessen down time at lower cost. He's the man to see for complete information about this modern heavy-duty, job-tested equipment.

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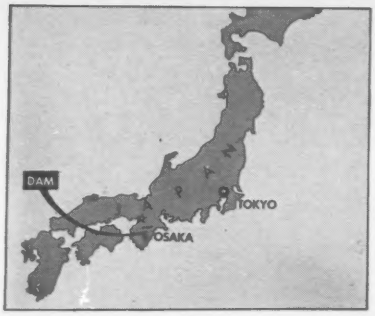


At Japan's Tonoyama Project, V-shaped gorge only 350 ft wide at top dictated that . . .

Orifices Pass Floods Through Arch Dam

A. E. Niederhoff
Senior Hydraulic Engineer
The J. G. White Engineering Corp.
Taipei, Taiwan

The Kansai Electric Power Co., of Osaka, Japan, has recently completed a 210 ft high thin arch dam featuring six submerged orifice openings that can discharge 88,000 cfs of flood waters under a 74 ft head. On three occasions since the project was completed, the orifices, equipped with inclined lift gates, performed admirably. The jets landed in a stilling basin 300 ft downstream from the dam's toe.

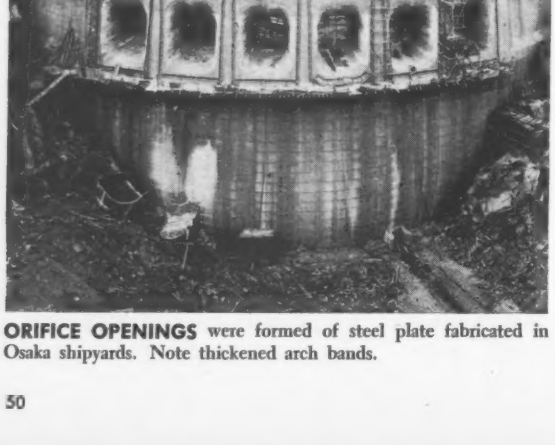
Other notable features of the Tonoyama Project, as it is known, are the use of a Kaplan turbine under 230 ft of gross head plus the excellent earthquake resistance of the arch dam.

The project is located in the mountainous, rainy, southeast portion of the main island of Japan, 60 air miles south of Osaka. The dam is built on a favorable reach of the Hikigawa River where a hairpin bend allows 230 ft of power head to be developed using a 12 ft dia concrete lined pressure tunnel only one mile long.

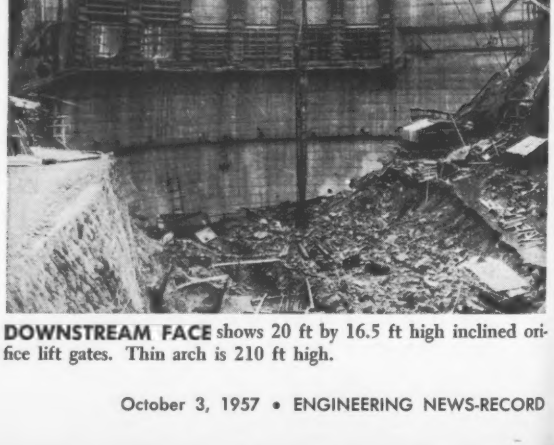
Above the dam, 113 sq mi of drainage area yield 875 cfs for 90 days in a year, and a firm annual flow (95% of the time) of 138 cfs. But frequent typhoons forced consideration of a design flood of 106,000 cfs. The 13,500 acre-ft of live pond storage behind the dam has little effect upon smoothing flood peaks.

• **Why orifices**—This flood discharge, coupled with a V-shaped gorge only 50 ft wide at the river level and 350 ft wide at top of the dam, prompted the unusual gated orifice.

The six orifice openings are bell-mouthed and exactly identical, being constructed with steel plate concrete forms. On the downstream face of the dam the inclined steel gates, 20 ft wide and 16.5 ft high, can pass 83% of the



ORIFICE OPENINGS were formed of steel plate fabricated in Osaka shipyards. Note thickened arch bands.



DOWNSTREAM FACE shows 20 ft by 16.5 ft high inclined orifice lift gates. Thin arch is 210 ft high.

design flood discharge. The remainder can be discharged through six conventional crest gates, 20 ft wide by 5 ft high.

Orifice gates are of the fixed wheel, lift type, operated by a cable and drum hoist located on the operating deck of the dam. There has been no leakage through these gates when subjected to a normal 74 ft of head above the gate sill.

The gates can be operated at partial openings, although at a point of 0.4 opening height they chatter. Dual controls for each gate hoist are used: one on the dam and the other in the control house on the right bank. It takes 15 min to fully open a gate against a head. Closing the gate against a small head is facilitated by the dead weight and the downward component of the resultant water pressure acting on the slightly inclined gate surface.

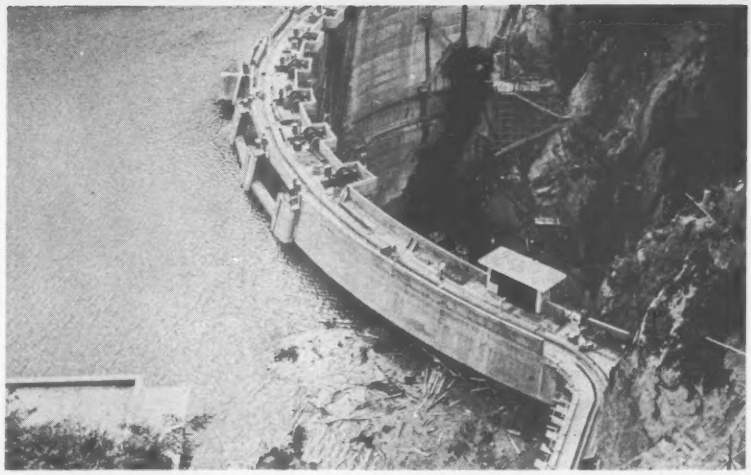
A concrete cofferdam that served downstream from the dam during construction was salvaged for use as the retaining wall for the stilling basin. Rock excavation from the project was placed on the cofferdam's upstream face to form the permanent stilling pool.

• **Arch dam design**—The 210 ft high dome-shaped arch dam, containing 67,000 cu yd of concrete, has a crest length of 420 ft. Central angle of the top arch is 116 deg. Crest thickness is 15 ft and base thickness is 40 ft. The downstream face is a three-centered arch with haunches at the abutments. Foundation rock for the dam is a hard conglomerate resembling concrete in physical characteristics.

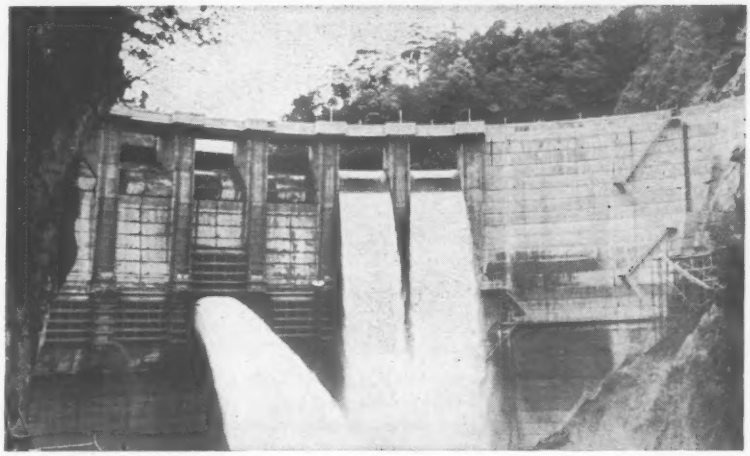
At the orifice gate openings, both top and bottom, the horizontal arch bands are made thicker for a height of 5 ft, with generous fillets of concrete extending back to the original arch lines. Tensile stresses in the separating piers between orifices were taken care of by reinforcing in the downstream half of the piers using railroad rails placed in an almost vertical position.

Originally, a trial load analysis was made of a selected arch and the lines were modified to obtain compatible stress distribution for a combination of arch and cantilever action. Later, a 1 to 30 structural scale model of pumice concrete was tested in the Technical Research Laboratory of the Central Research Institute near Tokyo.

The model was loaded by hydraulic jacks placed to simulate normal water loading on the dome shaped upstream face. Strains were measured by electrical resistance gages and deflections were measured by dial gages attached to the downstream face. To approximate dead load conditions, vertical wires were extended through the model and pulled downward by hydraulic jacks.



WITH RESERVOIR FULL, orifices are under 74 ft head. Orifice gate hoist machinery can be seen in offsets at top of dam on downstream side.



JETS FROM ORIFICE leap 300 ft downstream, compared here to crest gateway discharge. The six submerged openings can discharge 88,000 cfs.

The model construction, including erection of a sheltering building, and the testing required about one year to complete. Discoveries of local areas of high tensile stresses in the model, which dictated the use of steel reinforcement in the prototype, fully justified the cost and time consumed by this degree of supplemental model analysis of Tonoyama arch dam.

Upon conclusion of the tests, the model was loaded up to the limit of the hydraulic jacks without any sign of structural failure. It was concluded that the prototype arch has a factor of safety of more than 7.

• **Earthquake studies**—The effect of earthquake shocks was investigated on smaller models which were subjected to simple harmonic motion and to shock impulses. Conclusions from these tests were that an arch dam is more resistant to earthquake shocks after completion than other concrete dams, but during certain critical phases of construction it is extremely vulnerable.

Deflections and deformations of the prototype under load have been measured from permanently established reference points on the right and left banks and at the crown of the arch on the upstream face of the dam at the crest. Upon completion of the structure, readings were taken before the reservoir was filled. After the power pool was established, readings were again taken of the dam under a full load of water.

A close approximation with the previous laboratory determined deflections and deformations was obtained. Design concepts of creep, thermal coefficient, Poissons ratio for concrete and for abutment rock and shear modulus ratio, tangential and radial, will be checked in the future under various loading conditions. Behavior of the

Veteran operator Delbert Corman "at ease" while his Cleveland is digging gas and water lines for a Lexington, Ky. subdivision

Cleveland's exclusive multi-speed transmission provides right power/speed ratio for every job

"For easy handling and dependable digging even under the toughest trenching conditions give me a Cleveland every time," says long-time heavy equipment operator Delbert Corman of Aldridge & Poage Co., Lexington, Ky., owners of 3 Clevelands. Thousands of trench operators and owners throughout the world agree with him. Credit for this world-wide preference for Clevelands is due to the perfectly balanced combination of practical performance-proved features found in every Cleveland. Practically every modern trencher feature originated with Cleveland. But no single trencher feature ever developed is the equal of Cleveland's exclusive multi-speed crawler transmission.

For *each* of 4 digging wheel speeds this transmission provides 12 individual crawler speeds forward and 12 reverse, all closely and evenly graduated. The 48 forward speeds give the operator a choice of over 30 *practical* digging speeds—over 30 usable *combinations* of digging wheel and crawler speeds, providing the *right* combination of power and speed for digging every soil, under every digging condition. The following table of non-slipping, power-saving digging speeds for the Cleveland 95 is typical.

Cleveland's exclusive multi-speed transmission has no equal

For each of 4 wheel speeds	there are 12 individual crawler speeds											
With Main Transmission (and Digging Wheel) in	SPEEDS (in Feet per Minute) — Available in Either Direction (Bold Face Indicates Most Commonly Used Digging Speeds)											
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Second Speed	1	1.4	2.2	2.9	3.9	5.3	6.6	9	11.5	23.8	43	73
Third Speed	2	2.8	4.3	5.8	7.8	10.6	13.3	17.9	22.8	47	86	146
High Speed (Ordinarily used when digging)	3.3	4.6	7.1	9.5	12.8	17.5	21.7	29.6	38	78	143	240
Reverse (not used when digging)	.4	.6	.9	1.2	1.6	2.2	2.7	3.7	4.8	9.9	18	30

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Tonoyama arch dam

dam under full, partial and earthquake loading as well as during periods of severe temperatures will be excellent guides for future designs.

Tonoyama powerhouse has one vertical shaft generating unit installed, rated at 17,000 kw. It is driven by one of the highest head Kaplan turbines in the world.

The turbine operates satisfactorily under 230 ft of head with a maximum water requirement of 920 cfs. Efficiency varies from 86% at one-half maximum water requirement to 90% at maximum water use. The turbine and generator were built by Hitachi after extensive tests for cavitation prevention at the Company's hydraulic laboratory. Credit for the high head Kaplan wheel goes to Toru Komoriya, Hitachi's chief turbine designer. Only 11 operators will be required on the staff of this remote project.

• **All Japanese project**—It is significant that design, model testing and construction at Tonoyama were done entirely by Japanese engineers and contractors working without the aid of foreign consultants. The Japanese recognized the material saving aspects of an arch dam with orifice gates that was first designed by engineers of several European structures.

On the Tonoyama project it is possible to accommodate large floods in the limited space occupied by six orifice gates. At other sites where river silt and bed loads quickly fill reservoirs to the gate sills, the effective storage of a project can be increased by the use of low mounted orifice gates.

Problems of downstream erosion from gravel laden water pouring through orifice gates may be critical in certain specific cases. At Tonoyama, however, the water is clear and the hard conglomerate river bottom protected by a cushioning pool has suffered almost no erosion.

Contractors at Tonoyama were the Maeda Construction Co., Tokyo, on the dam, intake and pressure tunnel, and Okumura Construction Co., of Osaka, on the powerhouse, surge tank and penstocks. J. Maruyama was resident engineer for the Kansai Electric Power Co.

Total construction cost approximated $7 million. About 1,600 workers were employed during peak of construction activity.

The placement of concrete at Tonoyama was performed by means of overhead cableway.

Koso Tada is the director of the Central Research Institute and H. Kimishima was directly in charge of the model testing program.

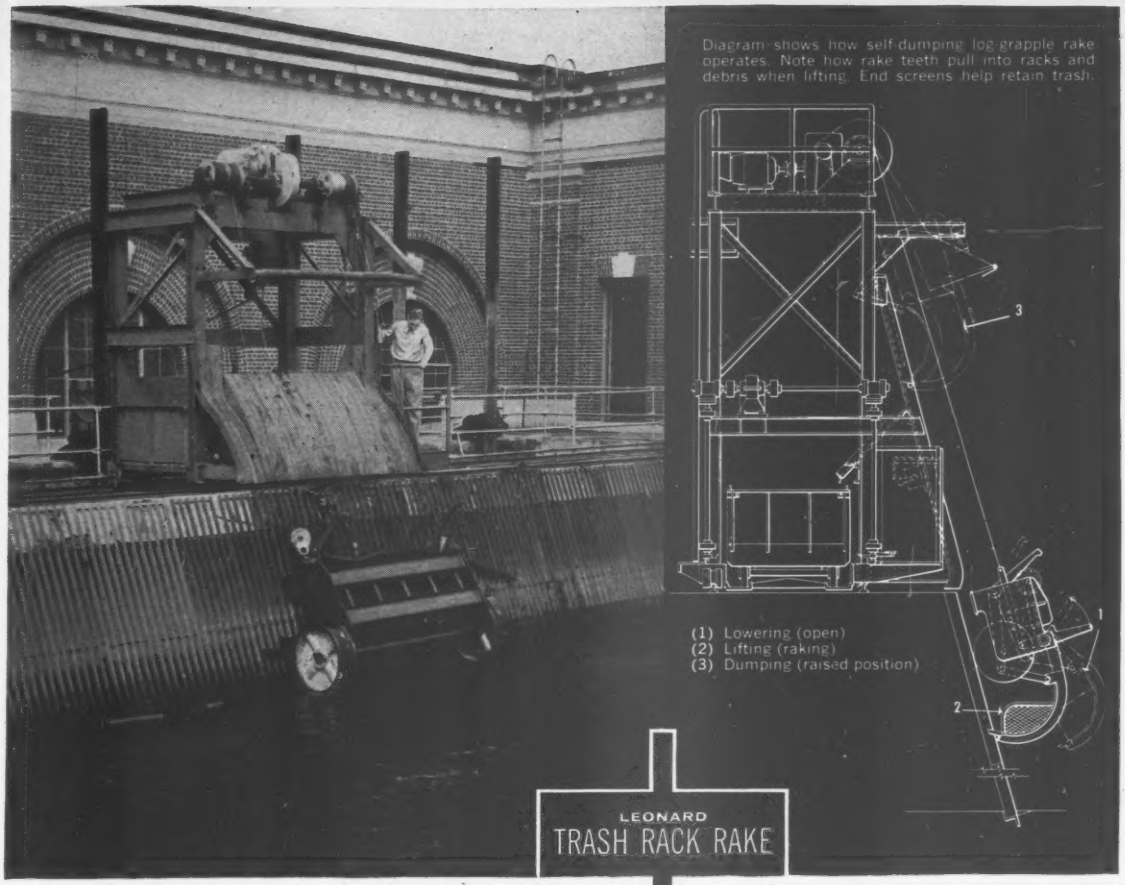
Diagram shows how self-dumping log-grapple rake operates. Note how rake teeth pull into racks and debris when lifting. End screens help retain trash.
(1) Lowering (open)
(2) Lifting (raking)
(3) Dumping (raised position)
1
2
3
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TRASH RACK RAKE

New 8-foot, self-dumping SMS rake at Niagara Mohawk Power Corporation's Black River Station is one of five recently installed by this company.

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Now SMS offers you two improved Leonard trash rack rakes, both regular and log-grapple types. These self-dumping rake designs make operation easier and quicker, permit you to clean a greater area faster. Both new rake types are now available as additions to the SMS line of standard rake designs.

SMS Leonard rakes operate directly on trash rack bars . . . ride down over stubborn obstructions and work them loose. Such freedom of movement assures fast, easy cleaning. Initial costs are low because the width of SMS rakes can be kept to the minimum required for handling for trash and the expense of guides attached to racks, or embedded in piers is eliminated. These rakes are of simple and rugged construction, designed for outdoor service and require minimum maintenance.

For full information on trash rakes and other SMS accessories, write to S. Morgan Smith Co., York, Penna. Request Bulletin 158 on Leonard rakes, or Bulletin 158A on new, self-dumping rakes.

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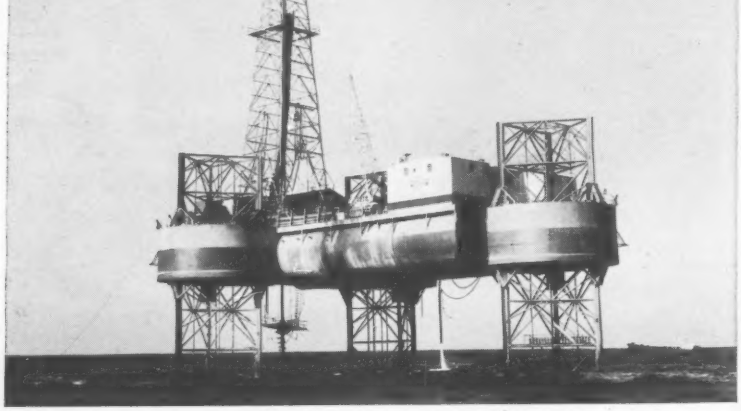


Whether it's a fixed platform tended by converted LST (above) or a self-contained mobile unit (at right) safety, dependability and economy are emphasized in . . .

New Designs in Offshore Drilling Rigs

J. Roland Carr
Associate Editor

Offshore drilling for oil and gas in the Gulf of Mexico—always a highly competitive gamble—is becoming even more so as the search for new fields is widened and intensified. As exploratory operations are extended farther from shore and into deeper water, both the design and construction of drilling rigs offer engineering challenges of high order.

That the stakes are well worth the gamble is borne out by the mushroom growth of drilling activity since the first offshore lease sale was held by Louisiana on Aug. 14, 1945. Since then, according to McGraw-Hill's PETROLEUM WEEK, more than $1.5 billion has been invested in offshore drilling ventures off the coasts of Louisiana, Texas and California. During the same period, offshore oil operators have leased nearly 5 million acres of ocean bottom in those areas, and put down nearly 11 million lin ft of drillhole.

Spurred by the upsurge in off-shore drilling during the past three years, designers and fabricators have developed a variety of drilling platforms. Each has demonstrated capabilities to cope with various drilling requirements. But some have also disclosed real or potential weaknesses in the face of high winds, rough waves and shifting ocean bottoms.

Hurricanes and near-hurricane winds also have provided severe tests of basic design theories as well as fabrication techniques and erection procedures.

Offshore drillers admit that the rush to get into production, in some instances, has resulted in some drilling platforms—both fixed and mobile types—that leave something to be desired when it comes to safe and efficient operations. But now that the first big rush to get a number of platforms in operation is over, designers and fabricators are taking a critical look at their

EDITOR'S NOTE—This is the first of two articles by Roland Carr. The second, which will be published shortly, will outline some of the high points of a number of specific, additional offshore drilling rigs.

handiwork. As a result, future designs will undoubtedly place more emphasis on economical construction and production, as well as safer and more dependable operation under all drilling conditions.

• **Three basic types**—There are three basic types of offshore drilling platforms, each with certain advantages and disadvantages, depending upon the drilling conditions. **They are the mobile type, the self-contained, and the tender-type platform.**

Designs vary widely for each type of platform. And so do fabrication costs. Basically, the mobile type has a floating hull that can be raised out of the water on legs when the rig is to operate. The fixed type—either self-contained or tender-type—is supported on long piling driven through a tubular template into the bed of the ocean.

Incredible lengths of pile penetrations sometimes are needed to provide adequate resistance to carry the vertical loads. At one wildcat well in the bottomless mud opposite the mouth of the Mississippi, tubular piles 510 ft long were used. These were driven through 50 ft of water and 415 ft into the bed of the Gulf.

Mobile Platform

As its name indicates, the mobile type rig can be moved from one site to another, in a relatively short time and at a comparatively low cost.

It is self-contained since it carries complete drilling equipment, mud tanks and pipe racks, and quarters for feeding and housing its crew. Provisions are generally made in the design for a helicopter landing area. It is also equipped with a communications system to shore.

Because of its mancuverability, the mobile type platform offers considerable advantage in exploratory drilling. It is more vulnerable however, to wind and wave action than is the fixed type.

Rental charges of a big mobile drilling platform are high—ranging from $5,000 to $10,000 per day—because of the substantial initial investment and high cost of daily operation. There are about 40 of these mobile platforms now in operation or under construction. The largest now in operation can drill in water depths up to 125 ft. One big rig being fabricated is designed to operate in 140 ft of water.

Although the maximum depth of water in which a mobile platform can operate successfully has not yet been determined, some designers believe it is in the neighborhood of 140 to 150 ft. To go deeper could be feasible but probably not economical.

For instance, a mobile drilling platform designed to drill in 200 ft of water would cost at least $10 million. Such a rig would have to earn $1 million per year to pay for itself in a reasonable length of time. Even assuming 300 working days a year, the daily rental would be near $30,000—an almost prohibitive figure even for oil well development.

On the other hand a fixed drilling rig capable of drilling 12 wells in 200 ft of water could be fabricated and erected at an estimated cost of about $2 million. Rental rates on such a rig would probably range between $2,500 and $3,500 per day.

Self-contained Platform

Due to its permanent construction and the high cost of salvaging and moving it to a new site, the self-contained platform is best suited for development drilling.

It is a fixed structure supported on tubular piles driven deep into the ocean bed, and can drill as many as 18 holes. Although to date these rigs have operated in maximum water depth of about 115 ft, engineers and drilling contractors believe they can be designed to operate in depths up to 200 ft—and perhaps even greater depths with some revisions and changes in design.

The self-contained platform—like its roving contemporary, the mobile platform—is equipped with complete facilities for drilling to depths of nearly 4 miles. It also provides quarters and recreational facilities for the crew, usually a helicopter landing area, and communication systems throughout the rig and to shore.

Designers of self-contained rigs point out that size and rigid construction favor withstanding high winds and waves. Some of the larger platforms measure 230x110 ft, and have double decks. There are about 40 self-contained platforms now operating in the Gulf, and several under construction.

Tender-type Platform

According to a number of drilling contractors, the combination of minimum drilling platform and boat tender has a number of advantages over the larger self-contained or mobile platforms.

Costs of construction and operation are less, and rental rates are correspondingly lower. Usually the platform contains only the drilling equipment, which may include mud tanks and pipe racks.

The tender—which in a number of cases is a converted LST (Landing Ship, Tank)—houses the crew and supplies the power for drilling. It also furnishes ship-to-shore communications, and mounts a crane for handling materials and machinery. Usually a helicopter landing deck also is provided.

The tender-type platform operates successfully in water depths up to 100 ft, and designers believe this can be increased economically to at least 125 ft. The rig can be used for both exploratory and development drilling. After the first well has been completed, up to six more can be drilled at the same location. It can also be expanded to a self-contained platform if necessary, by adding additional sections.

One problem of operating this type of platform is that of providing adequate anchorage. The deeper the water, the larger and more rigid must be the platform to provide sufficient stability. On the other hand, losses from severe storms can be minimized by quick withdrawal of the tender, while the fixed platform is designed to ride out a storm better than mobile platforms.

At present there are about 50 tenders serving these minimum platform drilling rigs. About 30 are converted vessels, while the others were built specifically for offshore drilling.

• **Big investment**—Regardless of the type of offshore rig, each represents a substantial investment by the time it is fabricated and fully equipped ready for drilling. A big mobile rig will cost, complete, from $2 million to $5 million, or even more. A self-contained platform will cost from $1 million to $1.5 million; a medium size tender-type platform, from $400,000 to $800,000; and a tender vessel can cost $1 million or more.

• **Rig failures**—Despite the many safety factors incorporated in the designs of both mobile and fixed drilling platforms, the big ones as well as medium-sized ones come to grief occasionally. Usually this is a result of high winds, waves, unstable ocean bottom or a combination of all three.

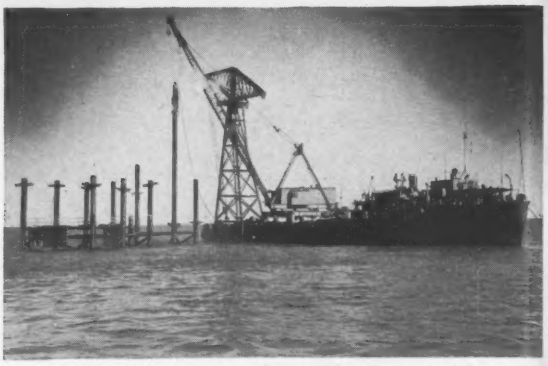
Noteworthy examples of such failures in recent months include the C. G. Glasscock Drilling Company's giant $3.5 million mobile drilling platform, "Mr. Gus," that toppled in 40 ft of water last April about 25 miles southwest of Corpus Christi. An initial list was blamed on the shifting, unstable Gulf bottom, followed by destructive wind and wave forces that laid the big double-deck platform on its side.

At the same time, Kerr-McGee Oil Industries' Rig No. 40—a medium sized drilling platform—was blown off its drilling location in the Gulf and tilted nearly 30 deg, necessitating an extensive salvage and repair operation.

Two other drilling platform failures

. . . Brown & Root offshore drilling platform is designed for erection in four steps:

PREFABRICATED tubular pipe template is positioned on the bed of the Gulf . . .



. . . long foundation piles are driven through the template tubes into the ocean bottom . . .

in the Gulf this year were blamed on shifting ocean bottoms rather than wind and waves. One was the self-contained drill barge owned by the Golden Meadow Well Service Co. which overturned in April about 80 miles southeast of New Orleans. The other was the tender-type three-legged drilling rig owned by Deepwater Exploration Co., which heeled over in 28 ft of water after one of its legs collapsed.

• **Hurricane damage**—Surprisingly, however, Hurricane Audrey didn't do too much damage to offshore drilling rigs in the Gulf of Mexico last June. The Zapata Off-Shore Company's giant mobile drilling platform, "Vinegarroon", reportedly lost only one catwalk and a small amount of paint. Considerable damage was done to the dry dock type drill barge, "Ed Malloy," owned by John W. Mecom, and three of four tenders that broke loose from their anchorages were beached after drifting several miles across the Gulf.

It is no wonder that the designs of offshore drilling platforms vary so widely or have undergone so many changes. In the early development stages some rigs lacked adequate safety or operational efficiency. Others were over-designed, with larger working areas than necessary, resulting in excessive costs and wasted materials.

Contemporary design of offshore drilling rigs continues to challenge the ingenuity and resourcefulness of engineers. But a composite pattern of developments to date—as well as the future of this segment of the construction industry—are indicated in first-hand interviews with some of those who design, construct and operate the rigs.

The following is the first such interview. Others will be presented in a subsequent issue.

Brown & Root's Design

Among active builders of offshore drilling platforms—and an old hand at the business—is Brown & Root, Marine Operators, Inc., of Houston, Texas. Usually, this company contracts for the complete job of design, fabrication and erection of the drilling platforms—both self-contained and tender types. The contracts include setting the drilling equipment which is furnished by the owner, and completing the platform ready to begin drilling.

Brown & Root has developed a variety of platform designs which normally call for 8 piles to support a tender platform and 10 to 24 to carry a self-contained platform. In all cases the template, piles and deck structure are unitized at the site into a single structure, by welding, to resist the overturning forces of wind and waves and to carry the vertical loads of the drilling operations. The floor planking is carried on rolled steel beams, but the remaining structural members in the platform are welded tubular steel to minimize wind and wave pressures.

• **25 year storm**—Brown & Root designs its offshore drilling platforms for what is normally considered a 25 year storm (one that can be expected to occur at some point in the hurricane belt about once in 25 years), which is equivalent to a 125 mph wind, and a 49 ft wave.

Ordinarily an eight-pile platform can accommodate the drilling of five or six wells, extending to depths of 18,000 to 20,000 ft. The total weight of derrick and drilling equipment on such a platform ranges from 1 million to 1.5 million lb. Template tubes are 33 in. OD with a wall thickness of ½ in. Piles supporting the drilling platform are 30 in. OD with a nominal ⅝ in. wall thickness, but increased at the mud line as required to resist the horizontal forces of the wind and waves.

• **Construction methods**—The templates are fabricated on shore, transported by barge to the construction site and lowered into position on the bottom of the Gulf. First, however, a matting is attached to the base of the template to keep it from settling too deep into the mud.

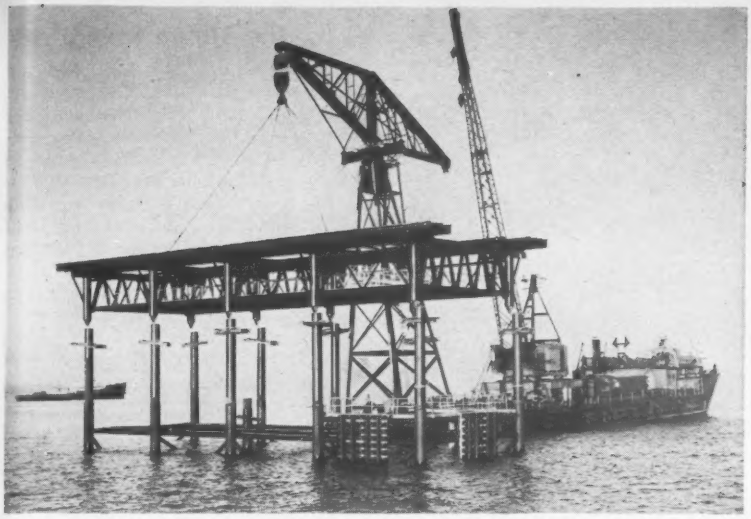
After the template has been positioned and leveled the piles are driven through the tubes and cut off at grade. The piles are driven to a resistance of 300 to 350 tons each. Penetration of the pilings varies considerably. It ranges from 80 ft offshore from Galveston, Texas to as much as 300 ft in the Delta area opposite the mouth of the Mississippi.

After the pilings are driven and cut off at proper elevation the deck section —which has been fabricated on shore and barged to the site—is set in place by giant cranes. Columns of the deck section are spaced accurately to fit the template, with a guide device at the bottom of each stub-column centering into the cut-off top of the bearing piles. Final operation is to weld the deck columns and supporting piles together. The piles are also welded to the tops of the template tubes for maximum stability.

• **Big equipment**—Jumbo size cranes are needed to handle the template, drive the long piles, and set the heavy deck sections for the big offshore drilling platforms. An average size double-deck platform, without drilling equipment, weighs about 250 tons.

To handle such a load Brown & Root has outfitted two barges with two big cranes each. One is a revolving and traveling gantry crane with a 160 ft boom and a lifting capacity of 75 tons at 60 ft radius. The other is a hammerhead crane with a 22 part line, a lifting capacity of 300 tons, and a total lifting height of 100 ft. Each of these barges is also equipped to quarter the working crew of 46 men for berthing and living throughout the entire operation.

Last year the company placed in service its most modern derrick barge. It measures 300x90x19 ft and is



. . . prefabricated deck section is hoisted into position by a 300 ton capacity hammerhead crane . . .

. . . and double-deck, self-contained platform with crew quarters and heliport, is completed and ready to start drilling.

equipped with a giant steam, revolving crane capable of handling and swinging a 250 ton load at 80 ft radius. The crane has a 225 ft boom with a 24 part line.

The barge has air conditioned quarters for a working crew of 60 men complete with recreational and messing facilities for a long working period. This giant barge is tended by a specially built 2,400 hp ocean going tug capable of towing it to any part of the Gulf or to South America.

• **Typical fixed rig**—A typical fixed drilling platform of Brown & Root design consists of a double-deck platform, with open metal grating on timber on the lower or cellar deck.

It has wire mesh handrail and tubular bracing between supporting piles. Transverse rolled beams on top of the piling and at the top chord line support longitudinal floor joists and two skid beams. The drilling derrick sets on these two skid beams and can be skidded from one well location to the next one.

The flooring of the upper deck usually is steel, although it may be timber. An average size tender type platform measures 52x110 ft.

The cellar deck in some designs contains living accommodations for a 30

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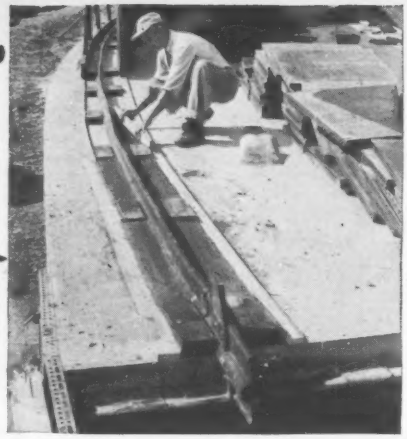
How to Choose Waterstop for optimum performance in concrete joints

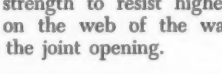


Basic Design And Resilience Most Important Factors

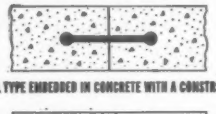
The principal function of waterstop is to keep concrete joints watertight where hydrostatic water pressure is present. To be effective, and to perform its function under widely varying conditions, the waterstop must:

1. **Be designed in such a way that it will maintain a "pressure seal" when the joint is opened up or compressed, or when hydrostatic pressure is exerted against it.**
2. **Be made of a material that is inherently stable and resilient...that will retain its resiliency and strength under wide ranges of temperature.**

There is general agreement by many governmental and private specifying authorities, after years of testing and actual installation, that the dumbbell design of waterstop (below) is mechanically superior to any which has been developed to date. The design provides a self-sealing action, because as the concrete contracts and the joint opens up, the outer edges of the dumbbell bulbs become more tightly engaged with the concrete, insuring a tighter seal as the tension increases, due to movement either in the joint or increasing water pressure on one side of the joint. In effect, the greater the longitudinal pull or pressure on one side, the more tightly the dumbbell ends are pulled and squeezed against the concrete. The simpler dumbbell design of the rubber waterstop allows full strength and contact with the concrete surrounding the waterstop. The larger design also provides for maximum strength to resist higher pressures on the web of the waterstop across the joint opening.



6" DUMBBELL TYPE EMBEDDED IN CONCRETE WITH A CONSTRUCTION JOINT



9" HOLLOW BULB TYPE EMBEDDED IN CONCRETE WITH AN EXPANSION JOINT

Rubber and vinyl are the most commonly used waterstop materials. For the majority of applications, rubber is the most satisfactory material. Being a thermosetting material, rubber is more resilient and "live"...will maintain a constant pull against the retaining edges (bulbs) as the joint opens up or water pressure increases. Vinyl is a thermoplastic compound and tends to take a "set" after it has been stretched, will float in the joint cavity, and have less resistance to the passage of water. When higher temperatures are present, such as in oil storage tanks, where oil is kept at temperatures around 150°F., the vinyl material, unless specifications are rigidly written, will soften and lose strength, causing a failure of the waterstop.

Field Splicing of Dumbbell Type

Servicised Products Corporation has developed a new Union which provides a simple method of joining the ends of dumbbell waterstops, making it just as fast and easy to field splice rubber and neoprene waterstop as the joining of the polyvinylchloride types.

The Union is made in the same cross-section, and from the same material as the waterstop. It is hollow, except for a solid web at the center. After adhesive is applied to the waterstop ends, they are inserted in the Union and pushed against the centering web. The splice is then clamped together until the adhesive has set. This completes the splice.

Dumbbell type rubber and neoprene waterstop are fully described in a special Waterstop Circular available from Servicised Products Corporation upon request. The Union and an interesting new development, Split Type, are also illustrated and described in the circular. Write for it today.

SERVICISED PRODUCTS CORPORATION
6051 W. 65th Street, Chicago 38, Illinois

. . . The Brown & Root rig

man crew; also storage areas and auxiliary equipment such as generators, compressors, etc. The cellar deck also houses a "Christmas tree" type well-control system containing numerous valves and blow-out preventers.

The upper deck includes pipe rack areas, mud tanks and operating facilities, pumps, a small crane for handling men and materials from supply boats to drilling platform, well-logging devices, and various major drilling tools.

• **Safety precautions**—Safety regulations require two means of escape from a drilling platform, in the event of a fire. One is an inclined ladder system from the upper deck to a fendered boat landing located just a few feet above water line. The other is a walkway cantilevered out from the lower deck, from which are hung escape ropes for emergency exit from the platform.

In the event that a fixed drilling platform is used for exploratory operations, or wildcat drilling, then dismantled, here's how it is done.

The deck structure is cut loose from the supporting group of piling at about the same point where deck and piles were welded together. Dynamite charges are then lowered into the piling and exploded about 10 ft below the mud line, cutting the piling. The piling and template are then salvaged.

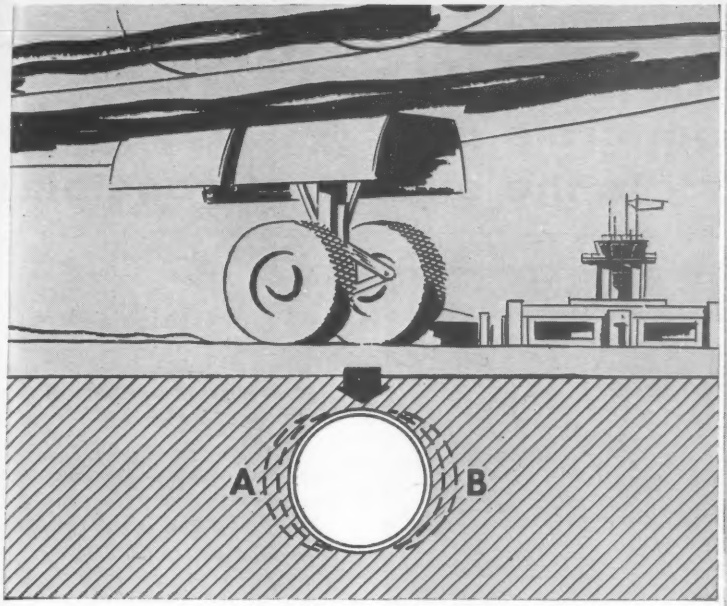
• **Biggest platform**—The largest drilling platform designed and built by Brown & Root to date measures 110 ft wide by 140 ft long. It is a self-contained platform supported on 16 battered tubular steel piles in 112 ft of water. It is arranged for drilling 12 wells, although as many as 18 wells could be drilled from such a platform.

The piles are battered 2 in. per foot to furnish greater stability against horizontal overturning forces of the wind and waves. It contains about 1,500 tons of steel, including the piling, jacket and deck section.

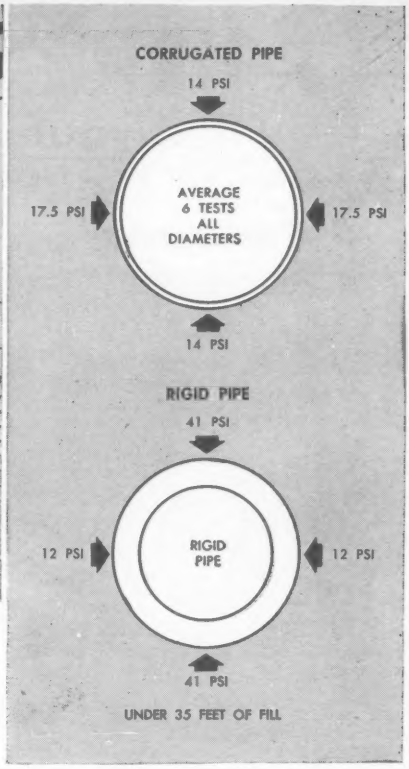
Annual Drawdown Starts On the TVA Reservoirs

The annual drawdown of lake levels in Tennessee Valley Authority's multipurpose reservoir system started last week, to bring them to flood-control elevations at the start of the flood season.

As usual, the drawdown will be done in such a manner as to make use of all, or as much as possible, of the water through turbines, and thus avoid spilling or wasting the water. Although rainfall and runoff were under par during August, the reservoirs are in fair condition with respect to system power supply for this time of year.



Airplane landing above a buried culvert illustrates the flexibility of the cross-section of a Beth-Cu-Loy pipe.



Showing approximate average pressures on both rigid and flexible test culverts under tracks of Illinois Central RR, Farina, Ill. (A.R.E.A. test).

Why Beth-Cu-Loy's flexibility is so important in drainage pipe

When you look head-on at a drainage pipe made from galvanized corrugated Beth-Cu-Loy sheets, you might well marvel that those thin sidewalls can support the load! Yet it's that same thin-ness that gives a Beth-Cu-Loy culvert its outstanding characteristic: flexibility.

Let's see how big a difference flexibility can make. A culvert made from Beth-Cu-Loy sheets can, because of its flexibility, enlist the aid of the surrounding material to support imposed loads. Thus in the typical example shown at upper left, the load produces controlled deflection in the pipe. As points A and B move into and compact the trench walls, a load begins to develop around these points and tends to distribute the pressures peripherally.

Rigid pipe, on the other hand, cannot flex with the load and thus cannot transfer an appreciable portion of the load to the surrounding material. The bulk of the pressure is exerted through the vertical axis of the pipe. This point is graphically portrayed by the diagrams at upper right. The figures used in the diagrams were obtained in an A.R.E.A. test conducted at Farina, Illinois, to determine the approximate average pressures on both flexible and rigid-type culverts. This test, like other research and experiments, demonstrates clearly that flexibility accounts in large part for the ability of corrugated metal pipe to carry the load.

Bethlehem does not fabricate culvert pipe. But we do manufacture galvanized Beth-Cu-Loy (copper-bearing steel) sheets, which fabricators make into pipe. If you would like further information about Beth-Cu-Loy, or the pipe made from it, just get in touch with the nearest Bethlehem sales office, or write to the address below.

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HERE'S ASSURANCE

that your concrete pipe is the strongest possible!

ANY CONCRETE PIPE that is reinforced with welded wire fabric is going to be stronger, more permanent, and easier to maintain than non-reinforced pipe.

BUT TO BE SURE of the *maximum possible* benefits from reinforcement, see that your pipe is reinforced with USS AMERICAN WELDED WIRE FABRIC. American Welded Wire Fabric is precision-made from quality cold-drawn steel wires. The quality of the steel . . . the dependability of the welds . . . the accuracy of wire spacing are all closely controlled to assure you of top performance.

You can get USS American Welded Wire Fabric in the right size and style for any type of sewer or culvert. It comes in circumferential wire sizes up to ½″ at 2″, 3″, and 4″ on centers. Write or call for complete information.

REMEMBER, IT PAYS TO ASK

"is it Reinforced"

AMERICAN STEEL & WIRE DIVISION
United States Steel
General Offices: Cleveland, Ohio

Columbia-Geneva Steel Division,
San Francisco, Pacific Coast Distributors

Tennessee Coal & Iron Division,
Fairfield, Ala., Southern Distributors

United States Steel Export Company, New York

USS

UNITED STATES STEEL

Portable Dredge Output Up to 85 Cu Yd per Hour

Portability has been combined with high performance characteristics in a low cost 8 in. dredge designed by Ellicott Machine Corp., Baltimore. The new unit has a rated output of up to 85 cu yd per hour.

A major feature of the dredge is an Ellicott 8 in. heavy duty centrifugal suction pump powered by a 6 cylinder diesel engine having a continuous rating of 142 hp (shaft). The diesel engine also powers the hydraulic pump for supplying power to the cutter and winch motors, thereby eliminating the expense and additional weight of an auxiliary power supply.

The unit can be used for all types of dredging work including mosquito control, land reclamation and the pumping of fill for real estate development and roadbuilding. It will pump mud, silt, sand and other light sedimentary materials from a maximum digging depth of 17 ft below the water surface.

Of welded steel construction, the hull consists of two tank type pontoons, the assembled size being 32 ft long x 14 ft wide x 4 ft deep. The dredging machinery is mounted on the main pontoon and can be handled as a single unit. The removable side hull pontoon tank is attached to the main tank for trim and stability.

The dredge is engineered to transport water-bound solids through pipelines of 500 to 1,500 ft, according to the builder. Rated capacity of 85 cu yd per hour is figured on the basis of pumping through 1,000 ft of 8 in. discharge pipeline with a terminal elevation of 5 ft above the surface of the water. Ellicott Machine Corp., 1611 Bush St., Baltimore, Md.

Bucket Elevator Line Adds New High Capacity Series

A series of high capacity—up to 120 tons per hour—bucket elevators are now available in two types: Bucket on chain for non-abrasion material and bucket on belt for abrasive materials.

The elevators are enclosed and are complete with head platform, ladder, safety cage and large clean-out doors. Various types of loading methods are available, including truck hoppers, boot hoppers and belt feeders, as well as screw feeders for cement applications.

All discharge chutes are made of 10 gage steel, constructed so that the chute may be turned over when the bottom portion shows signs of wear. Casings are flange type with welded construction, built in standard 10 ft lengths and have a coat of oxide zinc chromate primer.

The new series permits the manufacturer to offer standard equipment from 24 to 120 tons per hour in heights up to 70 ft. The Fairfield Engineering Co., Marion, Ohio.

Kenworth Builds Its Biggest Rear-Dumps

The newest and largest member of the Kenworth family of rock and ore movers—with a rated pay load capacity of 64 tons or 40 cu yd struck—is now coming off the production line.

The first 10 have been purchased by Kaiser Steel Corp. for use on ore hauls at its Eagle Mountain iron mine near Indio, Calif.

The 803-B has a gross vehicle weight rating of 228,000 lb and is powered by either a 400 or 600 hp, 12 cylinder diesel engine.

Measuring 41 ft 11 in. from the front bumper to the rear of the single axle semi-trailer, the 803-B has a turning radius of 37 ft with a turning angle of 30 deg. The tractor wheel base is 168 in. The double-core radiator has an area of 2,100 sq in. or 2,800 sq in., depending on the engine specified.

The tractor has front and rear axles of a special high-strength cast steel. Front axle capacity is 50,000 lb and rear axle, 100,000 lb.

The drive axle is full-floating double-reduction with the first reduction a spiral bevel drive unit and final reduction through planetary gears in each wheel. Mounted in rugged frame brackets, the rear springs are positioned by use of steel and resilient pads.

The side-by-side dual front springs are rubber-mounted at both ends and have 15 leaves per spring. Steel seats adjacent to the rubber pads at both ends of the springs shorten their effective length under load. In a loaded position, the rubber block is relieved by flattening of the spring arch. Unloaded, the front spring ends ride on rubber.

The dump body is of all-welded steel construction, and braced through box-section ribs and longitudinal reinforcement between the ribs at the body sides. Dumping action moves the tractor back and under the trailer as the entire trailer raises.

Pin-type construction of the fifth wheel insures stability in dumping and in over-the-road hauls. A body guide and equalizer stabilizes the body during dumping.

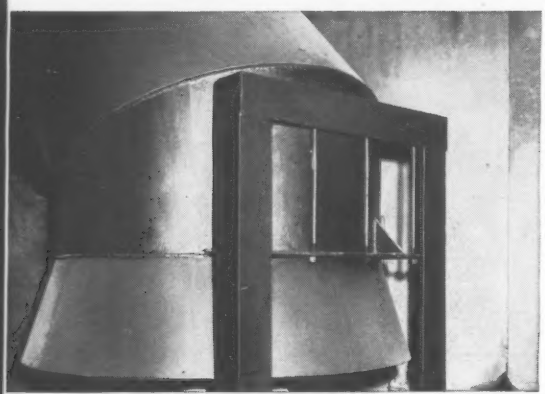
The telescopic hoist is single-acting two-cylinder, three-stage, straddle-mounted.

The one-man offset cab offers maximum direct vision in all directions and is enlarged in all dimensions to provide increased headroom and more ventilation. Kenworth Moror Truck Co., Seattle, Wash.

(*New Products continued on page 63*)

Welder applies the finishing touch to a section of corrosion resistant wrought iron duct slated for shipment to the Orlando Utilities Commission's municipal power plant.

Wrought Iron provides rugged opposition to corrosion in Orlando, Florida's municipal power plant



This wrought iron surge well outlet presents a formidable defense against corrosion and fatigue stresses at the Orlando powerhouse.

Three hundred sixty tons of durable wrought iron help minimize the threat of corrosion at the Orlando Utilities Commission's municipal power plant.

Here, ducts, tanks, pipe and stack installations of wrought iron are successfully withstanding corrosion. Result is low-cost corrosion control . . . virtually no maintenance or repairs. This material actually pays for itself in years of service rendered.

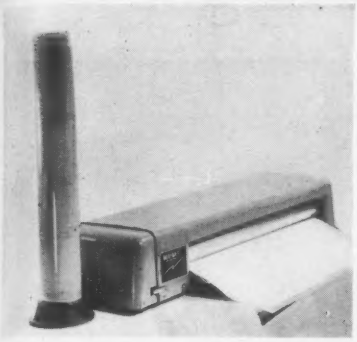
Reasons why wrought iron brings such permanence to plant facilities appear in our booklet, *The ABC's of Wrought Iron*. Write for your copy. A. M. Byers Company, Clark Building, Pittsburgh 22, Pennsylvania.

Available in Canada and throughout the world

Architects and Engineers: Robert & Co., Associates, Atlanta, Georgia
Fabricators: Brock & Blevins & Co., Inc., Rossville, Georgia
J. J. Finnigan Co., Inc., Atlanta, Georgia
Snyder Tank Co., Birmingham, Alabama

BYERS Wrought Iron Tubular and Hot Rolled Products

ALSO ELECTRIC FURNACE QUALITY STEEL PRODUCTS



Diazo Reproducer Made in 42 and 22 Inch Capacities

Blu-Ray, a diazo rotary printer, is made in capacities of 42 and 22 in. and comes complete with a dry developing unit. It has printing speeds up to 4 fpm, according to the manufacturer, and in making white prints from translucent originals, diazo papers of any standard manufacture may be used.

With the addition of a simple filter, the unit will expose silver transfer type photocopy papers which can then be developed in an accessory processor. In photocopying, reflex copies may be made from a 50 page pamphlet.

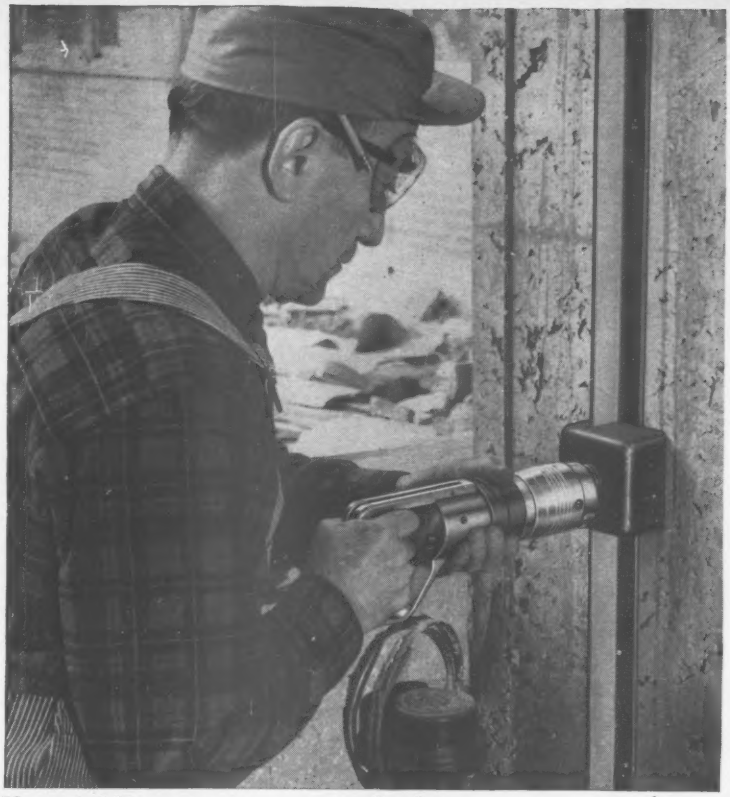
The developing unit features a transparent tube for visual observation of print development. Ammonia is contained in an unbreakable polyethylene jar. The 42 in. capacity model is priced under $300, the accessory processor is priced under $100. PEERLESS COLONIAL PRODUCTS, INC., 200 N. MAIN ST., IVORYTON, CONN.

Crane Specially Designed For Stationary Mounting

Production of a crane with a rated capacity of 35 tons at a 15 ft radius, designed for stationary pedestal mounting or on offshore drilling platforms, has been started.

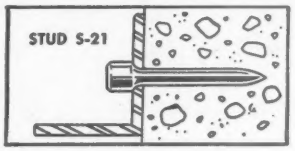
Standard features include large cable capacity drums, independent boom hoist, a boom head design that permits simultaneous operation of a main load line and a whip line, full vision, all weather cab with extended and elevated operator's station, walkway and handrailing, dual telescoping boom backstops, safety hook on hook block, rigid extra high boom gantry, brake type cab lock and full view boom radius indicator for accurate radius check.

Design features include a machinery deck constructed as a one piece weldment with ribbed side stands, involute shaft splining and anti-friction bearings. Complete weight of the machine with basic 60 ft boom—three 20 ft sections



No outside power source required —

Fasten angle iron to concrete or steel in seconds with the Remington Stud Driver



Recommended Stud for application pictured above—¼" Remington S-21 Stud with 22 caliber Power Load. Stud sets arrow-straight, iron is anchored permanently. Eliminates pre-drilling—no lost time.

Just a squeeze of the trigger anchors structural angle to concrete—without pre-drilling! This cartridge-powered fastening tool sets either ¼" or ⅜" diameter studs in steel or concrete . . . up to 6 per minute, either size. Over 40 Remington Studs to choose from, plus 22 and 32 caliber Power Loads scientifically graded to furnish *exact* power you need. Barrel change-over takes only 90 seconds *right on the job*. Take the tool anywhere, use it anywhere for light, medium or heavy-duty work. Most versatile fastening tool available!

SAVE TIME, CUT COSTS with this modern construction tool. Clip coupon for free booklet that shows how and where to use the Stud Driver.

Remington

DUPONT

STUD DRIVER

Industrial Sales Division, Dept. ENR-10
Remington Arms Company, Inc.
Bridgeport 2, Conn.

Please send me your free booklet which shows how I can speed the job and save with the Stud Driver.

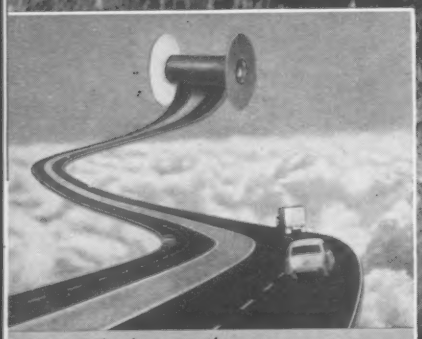
*Name*_____ *Position*_____

*Firm*_____

*Address*_____

*City*_____ *State*_____

Rugged ASPHALT paving saves W



Ribbons of velvet smoothness . . .
MODERN **ASPHALT** HIGHWAYS

ves Washington $30,000 a mile

...Saves State $381,000 in first cost on 12.7 miles of Interstate Highway. Maintenance savings expected, too!

For the Prairie Creek to Tumwater section of U. S. Highway 99, the State of Washington chose modern Asphalt pavement.

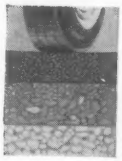
By so doing it saved thousands of dollars in initial costs alone. The entire paving cost for 12.7 miles was $826,978 . . . with savings of $30,000 a mile compared with a connecting slab-paved section. *And more savings are to come . . . for Washington's records indicate that Asphalt pavements cost less to maintain.*

As records show in state after state, modern Asphalt highways are not only economical but also rugged and safe.

Rugged . . . because layer-upon-layer construction "locks" surface to the foundation, builds up strength and resilience.

Safe . . . because modern Asphalt pavement is traction-textured for high skid-resistance. There is less glare . . . greater traffic-line visibility.

In winter, snow melts faster and Asphalt pavement is not harmed by de-icing chemicals.



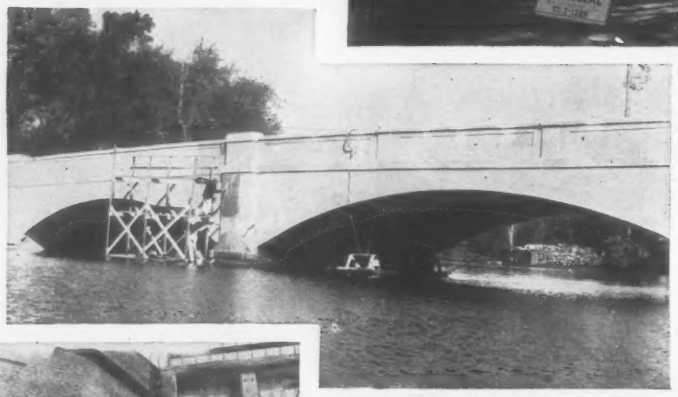
ENGINEERED FOR RUGGED WEAR

Modern Asphalt construction is a triumph of road-building science. Built-up layers spread the load . . . absorb shock and pounding. Economy, safety and comfort are built-in to last.

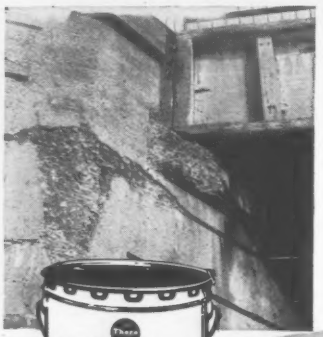
THE ASPHALT INSTITUTE
Asphalt Institute Building, College Park, Maryland

It's New Again with THORITE and THOROSEAL

Freeze-thaw cycle following water and moisture penetration, also swelling of reinforcing rods from moisture contact, cause masonry destruction.



BRIDGE OVER CONCORD RIVER
ROUTE 3, BELLERICA, MASS.



Workmen on scaffold patch spalled and cracked concrete with THORITE and seal surface with THOROSEAL.

Area at left chipped to sound masonry. It will then be patched with THORITE *Nonshrink, Nonslump 20-Minute Set Patching Mortar*, without necessity of costly forming, finished by application of Thoroseal.

Request Circular No. 16 and 20.

Write for our 16 page "How to Do It"

STANDARD DRY WALL PRODUCTS, INC.
NEW EAGLE, PENNSYLVANIA · CENTERVILLE, INDIANA

—is 48,800 lb. Overall length from front of cab to rear handrailing is 20½ ft. Overall height from turntable to boom gantry is 13 ft 5 in. and the overall width over handrailings is 13 ft.

Its standard engine is General Motor's 471 diesel; optional gasoline or electric power is available. INSLEY MANUFACTURING CORP., P. O. Box 167, INDIANAPOLIS, IND.

Mobile Loader Unit Has Extra High Lift

The "Sky-Hy Lift" is an extra high lift loader for use in various industries where a mobile unit with great lifting heights and high capacity is needed.

Attachments have been designed for use in most of the applicable industries and range from telescopic towers and concrete buckets for building contractors, crane attachments for setting steel and other straight lifting jobs, to adjustable width lifting forks, with or without hydraulic hold-down fingers.

The unit has been designed for safe operation as well as versatility. The operator is located away from moving parts, giving him easy access, maximum visibility and full power hydraulic controls.

The extendible reach feature, which gives up to 40 in. of horizontal movement of the load, allows for maximum reach when lifting over scaffolds and other obstructions, plus a close-to-wheels carrying position for added stability. When picking up or placing a load, the operator can position the machine in the approximate location and then reach forward to pick up the load, rather than moving the machine to the load.

It is available with 18½, 25½ or 29½ ft lifting heights. LULL ENGINEERING CO., 3045 HIGHWAY 13, ST. PAUL 11, MINN.

South Bend, Indiana, got its money's worth in this new $5,587,000 sewage disposal plant, built with the protection of an INA performance bond. Sollitt Construction Co., Inc., was the contractor.

CONTRACT WON...

INA's extra value helped to lower bid

When the bids are in and the qualifications compared, the winning contractor is often the one who has successfully economized in small ways. It is 'extra value' for the contractor if he can economize without sacrificing quality of service.

The contractor realized INA's extra value in a performance bond of Indemnity Insurance Company covering the disposal plant above. It was arranged through the local independent agent. Indemnity, with its broad bonding experience, formulated a plan to assure minimum rate. This resulted in a saving to the contractor equal to more than one-third of the difference between the successful contract bid and the next lowest.

This is but one example of extra value in coverage and, for contractors who qualify, minimum rates* and prompt handling of every need.

*Not available in Louisiana and Texas

INSURANCE BY NORTH AMERICA

INA 1792

INDEMNITY INSURANCE COMPANY OF NORTH AMERICA

SAVE MONEY ON WET JOBS

pre-drain faster with HIGH-CAPACITY equipment by

GRIFFIN

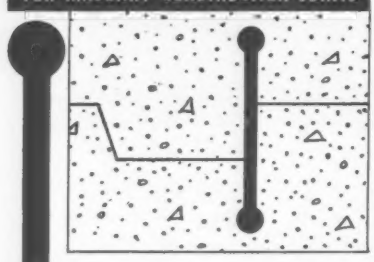
WELLPOINT CORP.

881 East 141st Street, New York 54, N. Y.
Hammond, Ind. Houston, Tex. Jacksonville, Fla.

Catalogue on request

RUBBER WATERSTOPS

FOR MASONRY CONSTRUCTION JOINTS



Williams Efficiency Waterstops are made from Natural Rubber Stock, and designed for maximum effectiveness in any type of cast-in-place construction joint. They will bend around corners—will not tear from shear action. Tensile Test: 3990 lbs.; Elongation Test: 650%. Available in rolls up to 80 feet in length. Field splicing is simple. Williams Waterstops can also be furnished in Neoprene for industrial uses where resistance to oil and other injurious wastes is desirable. These highly effective Waterstops are now in use in hundreds of industrial plants, commercial and public buildings throughout the country.

See Sweet's, or Write for Information.

WILLIAMS
EQUIPMENT and SUPPLY CO.
6001 E. McNichols Rd., Detroit 12, Mich.

Unit Prices

Runway Extension for Seattle-Tacoma Airport

Earthmoving and drainage work for this 2,000 ft runway extension went to Northwest Construction Co., Seattle at $723,505. This was 1% under the Port of Seattle's estimate, G. T. Treadwell, chief engineer. It also was the low of six bids, 2½% under the second and 32% under the high bid. The successful bid turned on the prices for clearing and grubbing and for soil preparation which more than accounted for differential.

The contractor supplies all materials except salvaged water line. Cement lined, cast iron pipe is 150 lb class, except 300 ft of 250 lb.

Minimum wage rates through August 24 include: common labor $2.51, pipe layers $2.81, power equipment operators from $2.85 on compressors to $3.19 on tractor-scrapers. Truck drivers range from $2.63 to $3.08.

The six bidders include:

1C	Northwest Constr Co., Seattle, Wash.	$723,505
2	Thomas Scalzo Co., Seattle, Wash.	740,683
6	Peter Kiewit Sons' Co., San Francisco, Calif.	1,066,066
EE	G. T. Treadwell, chief engr, Port of Seattle	730,000

Bids: 6-20-57 Items		Quantity	Unit Prices 1C	2
Clearing & grubbing	ac	75.18	$250.00	$1,135
Remove topsoil	ac	14.72	400.00	325.00
Move bldgs, misc	ls	job	1,500	2,800
Excav, fill, etc	cy	1,698,800	0.32	0.29
Grading, re-shaping	ac	1.78	800.00	500.00
Drainage				
Drain pipe, 6" ...ip	lf	3,000	2.20	2.20
8"	lf	560	2.50	2.50
10"	lf	3,620	2.84	2.84
12"	lf	2,950	3.27	3.27
15"	lf	2,180	4.64	4.64
18"	lf	25	7.00	7.00
Catch basins	ea	36	150.00	150.00
Manholes	ea	25	187.00	187.00
Conc drainage box	ls	job	200.00	200.00
Salvaged gutter	ls (lf)	(943)	1,750	1,750
New gutter	lf	1,600	2.50	2.50
Pipe culvert	lf	81	4.00	4.00
Water line alteration	ls	job	6,000	6,000
Salvaged water lines	ls	job	4,800	4,800
New water line	ls	job	13,800	13,800
Ducts, handholes	ls	job	4,200	5,200
Soil stabil, surf preparation	ac	98	100.00	165.00
fertilizer	t	22	225.00	239.00
seed	lb	8,500	1.70	1.53
mulch	sq	5,600	0.70	0.35
sprinkling	Mgal	1,372	3.00	1.50
Rock surfacing	sy	7,300	0.60	0.70
Fence except gates	lf	6,100	3.52	4.00
Gates	ea	3	276.00	300.00
Safety provisions	ls	job	5,000	1,000

Completion Schedule: 6-20-57 to 11-1-58

Overflow Spillway for Diversion Dam in Kansas

This $541,957 contract is for Woodston Diversion Dam, a 151 ft wide uncontrolled concrete overflow spillway section, radial gated sluiceway structure, a canal headworks structure, approximately 2,150 ft of 12 ft earth embankment, 2,000 ft of unlined gravity canal with 161cfs flow and 2,200 ft of riprap railroad embankment protection. The job is 1½ mi west of Woodston, Kans. for the U.S. Bu. of Reclamation, Stockton, Kans., C. S. Scribner, office engineer. Ace Construction Co., Omaha and M & A Construction Co., Superior, Nebr. took the contract on a joint venture bid 3% under both the second bidder and the engineer's estimate.

The owner furnishes rubber waterstops for the contractor to install but the contractor furnishes all other materials. Cement is paid for separately. The W/C will be 0.47, 0.53 and 0.60.

Minimum wages set for the job include: carpenters $2.00, cement finishers $2.25, common laborers $1.25, truck drivers $1.30 to $1.50, power equipment operators from $1.40 on conveyors to $2.25 on power shovels and cranes, reinforcing ironworkers $3.00.

The eight bidders included:

1C	Ace Constr Co., Omaha, Neb., & M&A Constr Co., Superior, Neb.	$541,957
2	Cook Constr Co., Jackson, Miss.	557,648
8	Platte Valley Constr Co., Grand Island, Neb.	727,453
EE	Bur of Reclamation, Stockton, Kansas	557,276

Bids: 5-21-57 Items	Unit	Quantity	Unit Prices 1C	2
Divers & care of river	ls	job	$17,500	$15,000
Excav, for struct, shale	cy	1,600	3.00	7.00
other than shale	cy	9,100	0.50	0.50
for canal	cy	150,500	0.215	0.35
Sprayed protective coating	sy	1,700	0.50	0.75
Excav under right embank	cy	20,000	0.18	0.30
for reloc channel	cy	56,000	0.23	0.30
from borrow	cy	48,000	0.305	0.35
Earthfill in embank, Zone 1	cy	32,000	0.15	0.15
Misc fill in embank, zone 2	cy	37,000	0.05	0.60
Backfill about structures	cy	1,500	1.00	0.50
compacting	cy	2,000	2.50	3.00
Riprap	cy	18,400	7.00	6.35
sand & gravel bedding	cy	5,150	7.00	7.00
Conc, crest, overflow weir	cy	900	82.00	35.00
struct except crest of overflow weir	cy	2,050	53.00	65.00
Elas filler matl, jnts ½", f&p	sf	310	1.50	2.00
Waterstps, jnts, tp A rub	lf	465	1.50	2.20
Sand & graded grav, filters	cy	100	8.00	7.75
Sewer pipe, clkd jnts, 4", f&p	lf	185	3.90	3.00
Seeding	ac	13	45.00	60.00
Topsoil for seeding	cy	11,000	0.25	0.70
Water for seeded areas	Mg	1,400	2.50	2.00
Steel, reinf bars	f&p lb	225,000	0.16	0.18
Cement	f&h bbl	4,350	5.00	6.00
Rad gate, incl hst, 8'x18', f&i	ls	job	10,700	13,500
CI slide gate, incl motor lift & contr, 84"x78"	f&i ls	job	4,000	5,450
Misc metalwork	f&i lb	3,200	0.80	1.00
Elec matls & equip	f&i ls	job	5,800	2,000

Completion Schedule: 480 days, 6-16-57 to 10-8-58
Liquidated Damages: $100 per day

Levee Setback, Mississippi Attracts Eight Bidders

Furnishing all plant, materials and equipment and performing all work required for the levee setback on the east bank of Pompey Ditch, Quitman County, Miss. involves 505,000 cu yd of earthmoving. This went under contract at $0.197 per cu yd to R. L. Eatherly Construction Co., Nashville, Tenn. for a total $99,485. Giva Excavation Co., Marks, Miss. bid $0.2021. The Vicksburg District, Corps of Engineers, had estimated $0.184, including profit. The high of eight bidders was M & W Construction Co., Tupelo, Miss. at $0.345 per cu yd.

MILESTONES IN POWER PROGRESS

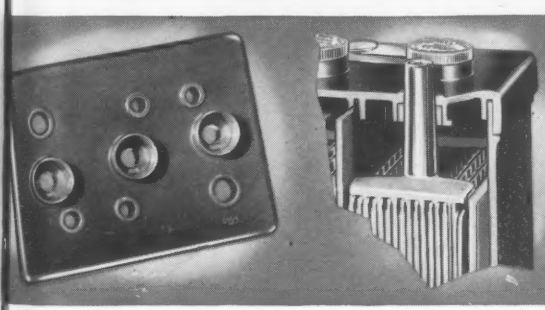
(NO. 2 IN A SERIES)

1904—First spark-plug ignition for 4-cylinder motor

1952—First practical one-piece battery cover introduced by GLOBE

The first spark plug ignition set for 4-cylinder engines was a fore-runner of today's complex ignition systems. Globe-Union's pioneering has continually developed batteries for these advanced systems. Typical of Globe's leadership is the one-piece battery cover introduced five years ago. Today one-piece covers are being used more and more to give —

1. **Extra battery capacity**
2. **Greater over-all container strength**
3. **Better looking batteries**



• Note unitized one-piece cover-case construction — brute for strength, less susceptible to damage in handling or distortion from extreme under-the-hood heat — resists vibration from road shock, protects vital battery parts — unharmed by oil and grease • Weld-sealed to case, having tongue and groove joint, triple sealed into one inseparable unit — cell partitions and container are strengthened, reinforced like a battleship to withstand heat and abuse • Another milestone in power — another first for Globe!

FASTER, LOW-COST DELIVERY!

Globe's sixteen plants are strategically located for fastest, lowest-cost shipments to all markets; thirteen (*) are producing creatively packaged dry-charged batteries.

*ATLANTA, GA., *DALLAS, TEXAS, *EMPORIA, KANSAS, *HOUSTON, TEXAS, *LOUISVILLE, KY., *MEDFORD, MASS., *MEMPHIS, TENN., *MILWAUKEE, WIS., *MINERAL RIDGE, OHIO, *PHILADELPHIA, PA., *REIDSVILLE, NO. CAROLINA, *SAN JOSE, CALIF., *HASTINGS-ON-HUDSON, N. Y., LOS ANGELES, CALIF., OREGON CITY, ORE., AJAX (ONTARIO) CANADA

SPINNING POWER
GLOBE-UNION
SPLIT-SECOND STARTING

GLOBE-UNION INC.

MILWAUKEE 1, WISCONSIN

If it's Petroleum-powered there's a GLOBE-BUILT BATTERY right from the start!

Materials and Labor Prices

Monthly Market Quotations by ENR Field Reporters

See following ENR issues for OTHER PRICES

- Cement, Aggregate, Ready-mixed Concrete, Asphalt: Last Sept. 5; Next Oct. 10
- Iron and steel Products, Pipe: Last, Sept. 12; Next, Oct. 17
- Wood Products, Glass, Explosives, Chemicals: Last, Sept. 19; Next, Oct. 24
- Clay Products, Lime, Plaster, Paint, Roofing: Last, Sept. 26; Next, Oct. 31

BUILDING BOARD & LATH AND INSULATION—DELIVERED TRUCKLOAD LOTS

	GYPSUM PLASTER BOARD tapered edge per Msq ft ½"	⅝"	GYPSUM BOARD LATH plain or perf per Msq ft ½" x 16" x 48"	GYPSUM SHEATHING tongue & groove per Msq ft ½" x 2' x 8'	FIBER BOARD SHEATHING asph impreg & coat per Msq ft ½" sq ed	½" T&G	FIBER BOARD INSULATION sq edge, paint per Msq ft ½"	MINERAL WOOL INSULATION† loose, per 40-lb bag a	3" batts per M sf a	GLASS FIBER INSULATION† loose, per 40-lb bag a	3" batts per M sf a	ALUMINUM FOIL 60# Kraft 1 side foil per roll of 250 s. f.	Expansible Blanket 2 layers fol per Msq.ft
Atlanta	$70.00	$80.00	$43.50	$70.00	$70.00	$127.00	$70.00	$1.00	$60.00	$2.00[b]	$75.00	.....	.....
Baltimore	51.25[f]	44.75[f]	32.55[f]	55.00[f]	65.00[f]	108.50[f]	69.00[f]	1.30	66.50	1.50	45.00	$4.00[g]	$33.50
Birmingham	73.00	60.00	47.77	75.00	82.00	136.50	81.00	1.40	70.00	1.60	75.00	3.13[g]	.....
Boston	60.00[m]	50.00[m]	35.00[m]	60.00[m]	65.00[m]	120.00[m]	79.00[kn]	1.45	75.00	.....	60.00	5.30	52.50
Chicago	67.00	52.00	42.00	62.00	85.00	123.00	85.00	1.85	80.00[k]	.....	63/65[t]	5.25[g]	.....
Cincinnati	48.00[w]	42.85[w]	32.05[w]	51.16[w]	70.00[w]	125.00[w]	72.50[w]	1.30	63.00	1.30	76.50	3.12[j]	50.00
Cleveland	60.50	55.00	40.00	65.00	74.00	130.00	80.00	1.35/1.50	80.00	.....	62.75*	20.00[c]	60.00
Dallas	58.00	55.00	42.50	65.00	73.50	132.50	70.00	1.92	66.00	1.40	66.10	4.30[g]	.....[l]
Denver	62.00	54.50	41.00	62.00	75.90	136.00	74.90	.....	71.00[n]	1.25[n]	75.00[b]	11.00[r]	21.00
Detroit	57.50	49.50	36.00	61.00	69.50	90.00	50.00	.....	.....	1.95[b]	58.00	.....	.....
Kansas City	65.00	55.00	40.00	.....	72.00	115.00	75.00	1.40	75.00	2.00	75.00	4.10[d]	44.10[t]
Los Angeles	64.00	50.00	0.33[s]	66.50	71.87	121.25	80.00	.....	58.00	1.35[s]	64.00	4.40[g]	.....[t]
Minneapolis	75.00	65.00	0.40[z]	80.00	78.00	140.00	78.00	2.00	80.00	1.80	80.00	5.50[r]	.....
Montreal	56.00	47.40	36/39	53.00	63.25	.....	63.00	1.50	66.00	1.50	66.00	9.00[q]	56.00
New Orleans	57.00	48.00	45.00	60.00	75.00	125.00	72.50	1.75	65.00*	.....	.....	.....	.....[w]
New York	53.00	45.50	35.00	54.00	71.00	117.00	72.50	1.55[b]	68.50	1.55[b]	68.50	4.05[i]	52.50[m]
Philadelphia	50.55	48.53	34.40	49.54	68.73	105/110	55/65	.....	60/70	.....	70/75	5.60/6.34	40/50
Pittsburgh	.....	47.50	35.00	.....	60.00	100.00	55.00	1.05[s]	55.00[s]	1.05[s]	55.00[s]	2.75[i]	38.50
St. Louis	65.00	55.00	39.00	70.00	75.00	120.00	80.00	1.35	85.00	1.85	66.00	4.50[i]	.....
San Francisco	55.00	46.50	0.35[z]	58.00	68.00	109.00	67.00	1.60	66.50	1.60	66.50	4.95	55.00
Seattle	66.00	57.50	49.45	65.00	74.50	125.00	73.50	1.60[y]	74.00	1.60*[z]	50.00*[z]	4.25	46.50
Toronto	61.00	50.00	38.00	64.50	75.00	.....	.....	1.40	60.00	.....	60.00	16.00[e]	45.45

[a] fob warehouse. [b] for hand packing. [c] 30# bag. [d] 2-side foil. [e] 40# kraft paper, 5 Msf, 100/500 rolls. [f] 20# sq ft bag, 4" thick. [g] full trailer loads. [h] 80# kraft paper backing. [i] LCL. [j] 40#. [k] 80#. [l] 7". [m] 2". [n] 10 ton quantities. [o] distributor's siding. [p] per Msf roll. [q] per sf. [r] 500 sf. [s] per cwt. [t] 35# bag. [u] Insulfoil. [v] flame proof $75 [w] fob city. [x] sq yd. [y] 26# bag. [z] 32# bag [aa] 12" to 24" width. [bb] semi-thick

HOURLY WAGE RATES—Base rate + fringe benefits

	Bricklayers	Carpenters	Struct. Iron Workers	Hoisting Engineers	Plasterers	Electrical Workers	Steamfitters	Common Labor—Building	Common Labor—Heavy Const
Atlanta	$3.45	$2.90	$3.15+7½[d]	$3.225	$3.125	$3.30+7½[e]	$3.30+25[d]	$1.55	$1.55
Baltimore	3.80+10[d]	3.05+7½[d]	3.65+7½[d]	3.55/3.70+10[cg]	3.35+7½[d]	3.425	3.30+7½[d]	1.90+7½[d]	1.90+7½[d]
Birmingham	3.50	2.70	3.20+10[c]	2.65[c]	3.05	3.30	3.32+10[c]	1.50	1.60
Boston	3.65+15[d]	3.25+10[cd]	3.70+20[cp]	3.65+10[cf]	3.30+13[cR]	3.25+25[dS]	2.45+7[cd]	2.45+7[cd]	2.35+7[cd]
Chicago	3.82½+7½[c]	3.45+20[cn]	3.80+15[c]	3.40+5[c]	3.70+23[c]	3.65+22[c]	3.55+22[cao]	2.77½+7½[c]	2.77½+7½[c]
Cincinnati	3.75	3.45	3.50+7½[cd]	3.225/3.475	3.50	3.67–4[cN]	3.65+9½[c]	2.50	2.40
Cleveland	3.715+10[c]	3.74	3.64+10[c]	3.74	3.74	3.765	3.64+10[cd]	3.00	2.915
Dallas	3.775	3.10	3.125+7½[c]	3.20	3.50+10[c]	3.25+7½[c]	3.25+7½[c]	1.62½	1.62½
Denver	3.75	3.20	3.125+7½[cd]	2.95	3.375+12½[dA]3.40[f]		3.35+15[cD]	2.10	2.10
Detroit	3.53+38[dH]	3.25+40[cp]	3.60+22½[cd]	3.20+20[cR]	3.58+34[cf]	3.65+34½[cC]	3.63+14[cB]	2.58+15[cr]	2.58+15[cr]
Kansas City	3.75	3.125	3.20	3.22	3.50	3.475[O]	3.40+9[cW]	2.255	2.305
Los Angeles	3.80+10[cbb]	3.22½+10[cd]	3.625+10[c]	3.19+10[cd]	3.94+15[d]	3.90[f]	3.70+19[cT]	2.50+7½[c]	2.50+7½[c]
Minneapolis	3.575	3.15	3.32	3.10	3.25+23[cG]	3.25+36[cn]	3.215+20[cc]	2.40	2.40
New Orleans	3.325+5[dc]	2.85	3.20+7½[cf]	2.925+7½[cf]	2.985+5[cf]	3.275+7½[c]	3.15+15[c]	1.60	1.60
New York	4.25+37[dbr]	3.90+31[dNJ]	4.30+36[cp]	4.15+33[cfr]	4.15+50[cA]	3.65+40[cdF]	4.10+41[chL]	2.80+22[cV]	2.80+22[cV]
Philadelphia	3.75+17[cf]	3.535	4.05+18[cM]	3.20½/3.95½+10[c]	3.90+15[cf]	4.07½+16[cu]	4.00+11½[c]	2.25	2.55
Pittsburgh	3.95+17½[cm]	3.525+7½[c]	3.80+10[cd]	3.42+10[cd]	3.575+17½[cm]	4.00+28[cd]	3.775+17½[cm]	2.325+17½[cm]	2.20+15[cfr]
St. Louis	3.75+28½[c]	3.35+10[cf]	3.37+7½[cf]	3.45[f]	3.675+7½[c]	3.75+26[cr]	3.70+20[cf]	2.40+10[cf]	2.40+10[cf]
San Francisco	3.95+52½[cdd]	3.175+30[cf]	3.62½+10[cc]	3.205+10[cc]	3.61+20[cw]	3.525+26[cU]	3.70+46[cK]	2.505+10[cc]	2.505+10[cc]
Seattle	3.75+10[cd]	2.94+10[cd]	3.25+10[cd]	3.13+20[cp]	3.40+10[cd]	3.40+21½[cX]	3.40+23[cT]	2.51+10[cd]	2.51+10[cd]
Montreal	2.20+16[cf]	2.00+16[cf]	2.15+16[cf]	1.90+15[cf]	2.22+19[cf]	2.20+18[cf]	2.22+18[cf]	1.40+10[cf]	1.40+10[cf]
Toronto	2.76+11[cf]	2.50+10[cf]	2.50+10[cf]	2.60+10[cf]	2.60+20[cfl]	2.80+11[cf]	2.49+16[cfl]	1.55+6[cf]	1.55+6[cf]

ENR Skilled Average (Bricklayers, Carpenters, Iron workers): $3.594. ENR Common Average $2.334.

* Cost of living bonus incl. in base pay. † FB. [a] 6 hr. day. [b] 7 hr. day. [c] 5% vac. stamp fund plus 10¢ WF for bricklayers; 4% VF for electricians plus 8¢ WF, 1% PF. [d] H & WF. [e] 10¢ H & W, 10¢ VF. [f] 10¢ H & W, 10¢ PF, 10¢ VF. [g] $2.85 homes & housing plus 7½¢ WF. [h] WF. [i] Inc. 4% VF; 1% PF pd by employer. [j] 10¢ WF, 5¢ VP, 5¢ HP. [k] 4% VF. [m] 7½¢ WF, 10¢ PF. [n] 7% V & Hol., 3% H & W, 1% PF. [o] 10¢ WF, 10¢ PF. [p] 3% WF, 3% PF +10¢ in lieu of pd. hol. [q] 10¢ WF, 8% V & H, 3% PF. [r] 4% WF, 20¢ PF. [s] 5% W & PF, 4% VF, 1% NC, 1% JI, plus 6 PH. [t] Inc. 10¢ WF. [u] 10¢ WF, 1% PF, ½% apprent. [v] 1 drum; 2 drums, 2.80. [w] 10¢ WF, 10¢ VF. [x] 2% VF. [y] 10¢ H & W, 10¢ PF. [z] 10¢ WF, 5¢ HP. [A] 15¢ WF, 15¢ PF, 20¢ BF. [B] 7½¢ VP, 5¢ PF, 1½¢ Ed. F. [C] 9¢ H & W & Ins., 7% V & H. [D] 10¢ H & WF, 5¢ indus. prom. [E] 6% WF, plus travel pay per day. [F] Plus $4 per day annuity contrib. [G] 10¢ WF, 10¢ VF, 3¢ prom. [H] 10¢ WF, 10¢ VP, 3% PF, 2% PH. [I] 15¢ H & WF, 5¢ advtg. [J] 5% WF, 6 PH, 3% PF. [K] 25¢ W & PF, 15¢ VF, plus 6¢ misc. [L] 3% WF, 3% PF, 3% VF, 1% Ed. F. [M] 10½¢ WF, 7½¢ PF. [N] 1% PF. [O] 10¢ WF, 1% NECA. [P] 10¢ H Ins., 7½¢ PF, 5¢ VF. [Q] 2 drums; 1 drum $2.85/3.00 + 10¢ WF. [R] 10¢ H & WF, 2¢ admin. 1¢ apprent. [S] 10¢ H & WF, 15¢ PF. [T] H & W, VF. [U] 10¢ WF, 13¢ VF, 3¢ PF. [V] 5% WF, 3% PF. [W] 7½¢ WF, 1½¢ Ed. F. [X] 7½¢ WF, 14¢ VF. [aa] 7¢ WF, 15¢ PF. [bb] 8¢ WF, 2¢ advg. [dd] 17½¢ WF, 2% PF, 10¢ PH, 5¢ Jt Bd. [ff] 10¢ H & W, 5¢ PF. [gg] 10¢ ins. [hh] 7½¢ H & WF, 5¢ indus. prom. [ii] 4% WF, 4% PF, 6 PH.

	Truck drivers 1½ T	—4 cy	+4 cy	Tractor Operators Incl. bulldozers 34–49 hp	70–100 hp	100 & over	Tractor scraper 15–16 cy	Power cranes & shovels ½ cy	¾ cy	Motor grader oper	Air comp oper	Air tool oper
Atlanta	$1.70	$1.80	$2.05	$2.70	$2.70	$2.70	$2.70	$3.225	$3.225	$2.70	$2.475	$1.77
Baltimore	1.90+7½[a]	1.90+7½[a]	2.00+7½[abh]	3.15/3.30 +10[cab]	3.15/3.30 +10[cab]	3.15/3.30 +10[cab]	3.15/3.30 +10[cab]	3.55/3.70 +10[cab]	3.55/3.30 +10[cab]	3.15/3.30 +10[cab]	2.85/3.30 +10[cab]	2.00+7½[a]
Birmingham	1.73	1.92[ff]	2.18[co]	2.79	2.79	2.79	2.93	2.93	2.93	2.89	2.52	1.75
Boston	2.395[c]	.....[c]	.....[c]	3.275+10[cad]	3.275+10[cad]	3.275+10[cad]	3.275+10[cad]	3.65+10[c]	3.65+10[c]	3.275+10[c]	3.20+10[c]	2.60+7[ca]
Chicago	2.16+12[fo]	.....	.....	3.15+5[c]	3.30+5[c]	3.20+5[c]	3.00+5[c]	3.75+5[c]	3.75+5[c]	3.25+5[c]	3.10+5[c]	.....
Cincinnati	2.33[co]	2.43[co]	2.53[co]	3.225	3.225	3.225	3.225	3.475	3.475	3.475	3.475	3.475
Cleveland	2.625+10[c]	2.625+10[c]	2.625+10[c]	3.49	3.49	3.49	3.49	3.74	3.74	3.49	3.365	3.365
Dallas	1.625	1.625	1.625/2.625[f]	1.625/2.625[f]	1.625/2.625[f]	1.625/2.625[f]	1.625/2.625[f]	1.625/2.625[f]	1.625/2.625[f]	1.625/2.625[f]	1.625/2.00[f]	1.775/2.00[f]
Denver	2.20	2.30	2.45	2.20	2.80	2.80	2.80	2.95	2.95	2.80	2.80	2.40
Detroit	2.61	2.61	2.61	3.50+10[c]	3.50+10[c]	3.50+10[c]	3.50+10[ca]	3.50+10[c]	3.50+10[c]	3.50+10[c]	3.225+10[c]	2.71+25[cmm]
Kansas City	2.23[a]	2.23[a]	2.305[p]	2.425	2.925[a]	2.975[a]	2.975[r]	3.22	3.22	2.835	2.975[f]	2.35
Los Angeles	2.63+7½[c]	2.63+7½[c]	2.83+7½[c]	3.47+10[c]	3.47+10[c]	3.47+10[c]	3.56+10[c]	3.56+10[c]	3.56+10[c]	3.56+10[c]	2.74+10[c]	2.71+7½[c]
Minneapolis	2.40	2.40[c]	2.55[c]	2.78	3.00[c]	.....	3.00	3.22[r]	3.48[c]	2.78	2.67	2.53
New Orleans	1.75	2.00	2.00	2.275+7½[c]	2.925+7½[c]	2.925+7½[c]	2.925+7½[ca]	2.925+7½[ca]	2.925+7½[ca]	2.925+7½[ca]	2.275+7½[ca]	1.70
New York	2.21+22½[cc]	2.75+14[dbb]	2.75+14[ebb]	3.525+28[ch]	3.525+28[ch]	3.525+28[ch]	3.65+29[ch]	4.40+35[ch]	4.40+35[ch]	3.65+29[ch]	3.65+29[chi]	3.25+16[cgg]
Philadelphia	—2.215/2.35+12½[cc]—			—3.20½/3.95½+10[c]—			3.20½/3.95½ +10[c]	—3.20½/3.95½+10[c]—		3.20½/3.95½ +10[c]	3.20+10[c]	2.25+10[c]
Pittsburgh	2.27+15[cm]	2.40+15[cm]	2.50+15[cm]	3.23+10[ca]	3.23+10[ca]	3.23+10[ca]	3.23+10[ca]	3.42+10[ca]	3.42+10[ca]	3.42+10[ca]	3.06[u]/3.60[v]	2.25+15[cm]
St. Louis	2.50+7½[cco]	2.60+7½[c]	2.60+7½[c]	3.45[ckk]	3.45[ckk]	3.45[ckk]	3.45[ck]	3.45[ck]	3.45[ck]	3.45[ck]	2.90[kk]	2.90[kk]
San Francisco	2.55+10[c]	2.55+10[c]	2.69+10[c]	3.32+10[a]	3.32+10[a]	3.32+10[a]	3.32+10[a]	3.65+10[c]	3.65+10[c]	3.48+10[a]	2.93+10[a]	2.775+10[a]
Seattle	2.80+17½[cmo]	2.80+17½[cddz]	3.00+17½[cee]	3.10+20[cff]	3.10+20[cff]	3.10+20[cff]	3.10+20[cff]	3.46+20[cff]	3.46+20[cff]	3.19+20[cff]	2.85+20[cff]	2.71+10[ca]
Montreal	1.40+11[cff]	1.40+11[cff]	1.40+11[cff]	1.60+15[cff]	1.83+15[cff]	1.83+15[cff]	1.83+15[cff]	2.09+16[cff]	2.09+16[cff]	1.83+15[cff]	1.70+15[cff]	1.70+15[cff]
Toronto	1.60+6[cff]	1.60+6[cff]	1.60+6[cff]	2.00+8[cff]	2.10+8[cff]	2.10+8[cff]	2.10+8[cff]	2.60+10[cff]	2.60+10[cff]	.....	2.15+9[cff]	2.15+9[cff]

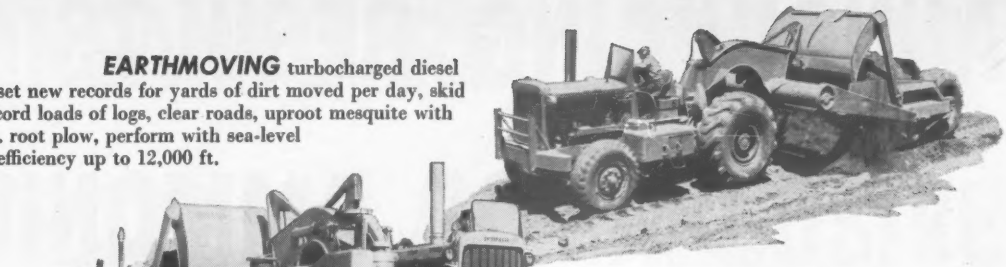
[a] H & WF. [b] lower rates, straight time; other broken. [c] 2-axle; 10 wh. 3 axle $2.45; Euclid $2.65. [d] intermediate. [e] bldg contr.; highway $2.45+7¢ WF. [f] less than 2-Tr. [g] up 6 cy. [h] 4% WF, 4% PF. [i] 6–8 cy. [j] plus $2 pd by employer for hosp. death benefits to family. [k] bldg constr; steel contr $3.475. [l] higher rates are union, other taken from min. wage approved by County Comm. Court. [m] 10¢ H & W, 5¢ PF. [n] flatbed. [o] under 10 cy. [p] over 10 cy. [q] over 50 hp. [r] blade grader. [s] WF. [t] single. [u] incl. 10¢ H & W. [v] incl. 7½¢ H & W. [w] 7½¢ H & W. 5¢ PF. [x] 7½¢ WF, 10¢ PF. [y] to 3½ cy. [z] 3½ cy & over. [aa] plus W & PF. [bb] 3% WF, 2% PF; plus 11 PH. [cc] 11¢ WF, 11½¢ PF, 11 PH. [dd] up to 5 cy. [ee] 5 cy & over. [ff] 1½ to 3 T. [gg] up to 5 T; 5 T & over, 2.25. [hh] 5¢ H & WF, 2½¢ PF. [ii] 4% VF. [kk] Incl. 10¢ WF. [ll] FB. [mm] 10¢ H & WF, 10¢ ins. 5¢ VP. [oo] Plus $2.25 wk. WF. [ss] 5% WF, plus 6 PH. [tt] 10¢ H & WF, 10¢ PF.

MEXICO CITY PRICES

n Pesos, F.o.b. City		Aug. '57	Sept. '57
Common Wages—Building (8 hr. day) (Peons)	av. per hr.	1.38	1.38
Common Wages—Heavy Const. (8 hr. day) (Peons)	av. per hr.	1.38	1.38
Skilled Labor Wages			
Carpenters (8 hr. day) 1 cl.	av. per hr.	2.48	2.48
Bricklayers (8 hr. day) 1 cl.	av. per hr.	2.48	2.48
Struct. Iron Workers (8 hr. day)	Remachadores. av. per hr.	3.77	3.77

Struct. Steel, Shapet		Aug. '57	Sept. '57
3"-15" x 12 meters	per metric ton	2100.00#	2100.00#
# fob Monterrey			
Reinf. Steel, Corr. Rods			
¼" x 11 meters	per ton	2000.00	2000.00
⅜" x 11 meters	per ton	2000.00	2000.00
½" x 11 meters	per ton	2000.00	2000.00
⅝" x 11 meters	per ton	2000.00	2000.00
¾" x 11 meters	per ton	2000.00	2000.00
1" x 11 meters	per ton	2000.00	2000.00

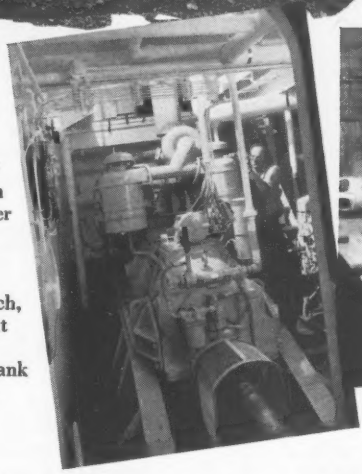
Gravel truck load at 3½ cu. meters		Aug. '57	Sept. '57
Blue Gravel	per tr. load	75.00	75.00
Rose Gravel	per tr. load	73.00	73.00
Cement, Std. Port. (Tolteca).	per tan	240.00	240.00
Lumber			
1" Pine	per M ft.	1400.00	1400.00
1½" Pine	per M ft.	1650.00	1650.00



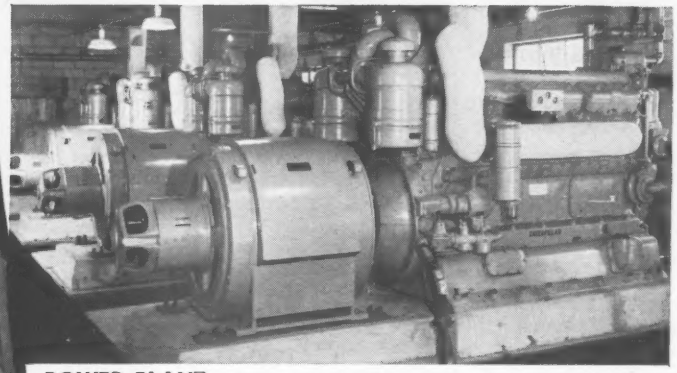
EARTHMOVING turbocharged diesel tractors set new records for yards of dirt moved per day, skid record loads of logs, clear roads, uproot mesquite with 14 ft. root plow, perform with sea-level efficiency up to 12,000 ft.

Caterpillar *built machines up performance with*

AIRESEARCH TURBOCHARGERS



MARINE turbocharged diesel engines in the inland river towboat, *Papa Guy*, are rated at 490 horsepower each, allow the boat to tow two 20,000-barrel tank barges per trip.



POWER PLANT turbocharged diesel engines at the Barton Light and Power Plant in Vermont raise output more than 25% while decreasing fuel per horsepower hour, noise and smoke.

In every diesel application, AiResearch turbochargers have improved engine performance to an outstanding degree. The exceptional efficiency of their basic design and turbine wheels makes them the finest in the industry.

They provide the following advantages: increased power up to 100% depending on engine design and application; lower specific fuel consumption; lower engine thermal loading and less smoke and noise. AiResearch turbochargers are air cooled, eliminating additional load on the cooling system and also eliminating complicated plumbing. Experience with thousands of units in the field proves their extreme reliability and durability.

• ***Your inquiries are invited.***

BASIC SPECIFICATIONS FOR AIRESEARCH TURBOCHARGERS

MODEL	F-51	C-60	A-60	E-100	B-100
Output — lb/min. (Standard Conditions)	29-51	30-60	38-60	50-100	60-100
Diameter — in. nom.	10.0	11.5	15.25	15.1	15.4
Length — in.	10.5	12.9	16.75	14.7	17.1
Weight — lb.	40.0	95.0	125.0	112.0	135.0

THE GARRETT CORPORATION

AiResearch Industrial Division

9225 South Aviation Blvd., Los Angeles 45, California

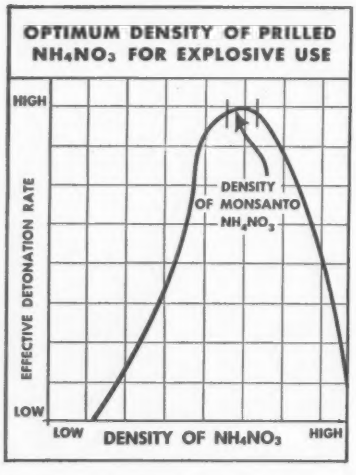
DESIGNERS AND MANUFACTURERS OF TURBOCHARGERS AND SPECIALIZED INDUSTRIAL PRODUCTS

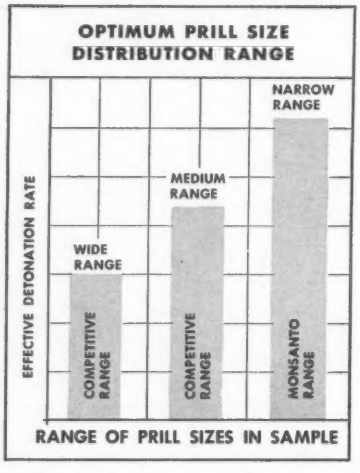
ANNOUNCING RESULTS OF

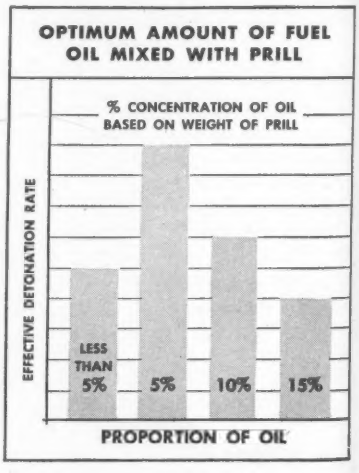
USE OF AMMONIUM

Monsanto is the world's largest manufacturer of prilled ammonium nitrate—and the world leader in developing the use of NH_4NO_3 as an explosive for open work. Presented here is information about the new top-quality product that Monsanto research has developed to give you the optimum in savings, safety, speed, ease of handling: Lion Brand Ammonium Nitrate for use as an explosive.

MOST EFFECTIVE NH_4NO_3 FOR EXPLOSIVE USE



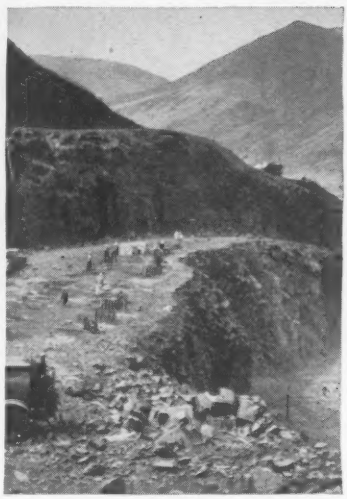




LION BRAND AMMONIUM NITRATE is produced according to the specifications determined by these findings of Monsanto research. Its prill size, density, and other properties are in optimum balance to give you the most effective performance when it is used as an explosive for open work.

MONSANTO RESEARCH IN NITRATE AS AN EXPLOSIVE

TYPICAL SHOT WITH MONSANTO PRILLED NH_4NO_3



View of area involved in the blast. Shot was made in heavy columnar basalt at dam site.

View at time of detonation. The system of detonation recommended by Monsanto, in conjunction with Monsanto's ammonium nitrate, will yield equivalent pound-for-pound results with 60% gelatin dynamite at one-fourth the cost.

Results of blast. The powder factor in the shot above was 0.4 pounds per cubic yard. Breakage of rock was considered ideal by contractor.

Photos courtesy of MORRISON-KNUDSEN CO., INC.

IMPORTANT FACTS ABOUT MONSANTO EXPLOSIVES SERVICES

1. Leadership in ammonium nitrate explosives research now makes Monsanto the source of newest information in this field.

2. A report presenting the latest research findings on the use of ammonium nitrate as an explosive—given by Monsanto to the Mining Society of AIME, October 1957—is available upon request.

3. Monsanto's experienced staff can give you the finest, most complete technical service. The benefit of this experience is available to you. Just phone Monsanto.

4. Monsanto's Lion Brand Ammonium Nitrate is immediately available to meet your needs. Monsanto is the world's largest manufacturer of prilled ammonium nitrate.

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MONSANTO CHEMICAL COMPANY, Inorganic Chemicals Division
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WHERE CREATIVE CHEMISTRY WORKS WONDERS FOR YOU

"We feel that the usage of the Tractairs is nothing short of essential in our type of operation," says Aaron J. Conner (left). Backfill tamping is only one of many jobs that can be done with the Le Roi tractor-compressor.

Hoist attached to front-end loader lifts pump assembly. The rubber-tired Tractair met contract stipulation of the Selma job that "there was to be no damage to existing street surfaces" during pipe-laying.

Tractair* Cuts Work Interruptions by Two-Thirds

Each Le Roi unit "saves at least $7.00 per day," general contractor reports.

Self-propelled tractor-compressor provides on-the-job air power without costly delays.

"Since the Tractairs enable us to eliminate work stoppages involved in moving the conventional wheeled, portable compressors from one working area to another on the same job site, we save at least a full day of labor at each construction location," reports Aaron J. Conner, general contractor of Roanoke, Va., who specializes in utility construction work. That's quite a saving when you consider that he employs 20 men, working 10-hour shifts.

He adds that the cost-cutting versatility of his three Le Roi tractor-compressors pays off on highly competitive municipal construction contracts. His most recent one involves the installation of city water, gas, and sewer lines at nearby Selma, Va.

Old Method Too Costly

Conner's work requires that compressors be moved as many as 10 times a day. With ordinary equipment, each move meant a work interruption of 30 minutes during which the entire compressor crew was idle. As a result, five man-hours were wasted during a normal day. In addition, each move tied up a truck and a moving crew, creating a secondary work stoppage.

"With the mobile Tractair equipment, it takes just one man to walk to the unit, move it directly to the next working area, and set up again, all within a ten-minute period," Conner reports. What's more, the truck and its crew are released for other duties.

Conner states that the best alternate equipment available doesn't approach the Tractair for cutting costs. "Overall labor cost per job is reduced by approximately 5%," he declares. And the Tractair simultaneously "permits us to achieve standards of efficiency we could not otherwise get."

Has Many Uses

Versatility is another Tractair advantage. For example, a hoist mounted on the unit's front-end loader reduced pipe-laying time by 20%. A scoop bucket adapts the tractor-compressor for stockpiling materials and for resurfacing ditch lines. Tractair also provides air power for drilling, tamping, and for air pressure-testing of natural-gas pipe lines.

So, if outmoded equipment is cutting too deeply into your profit, it's time to get a Le Roi Tractair. Write us today for details.

T-78

*"Tractair" is the registered trademark for Le Roi's combination tractor—air compresser.

LE ROI Division of Westinghouse Air Brake Co., Milwaukee 1, Wisconsin, manufacturers of Newmatic air tools, Tractair,® portable and stationary air compressors, and heavy-duty industrial engines. Write us for information on any of these products.

WABCO

Bids Asked—Low Bidders—Contracts Awarded—

Compiled by Business News Department—Engineering News-Record, 330 W. 42nd St., New York 36, N. Y., ELSIE EAVES, Manager
J. A. MAHONEY, M. WETZEL, M. E. SCIORRA, D. TARTAGLIA, S. N. NOLAN, Reports
I. H. WEBBER, M. R. ROESSLER, E. R. HUBER, Statistics.

NEW ENGLAND

HEAVY CONSTRUCTION—LB & CA

▲ RHODE ISLAND—State R. I. & Prov. Plants, Div. Purchase, State House, Providence, Bids opened 9/18,
Callan Constr. Corp., 539 Hope St., Bristol, R. I., LB $1,429,206, Contr. No. 5718, DA proj.-F-031 (3) wid'n, imprv. Wampanoog Trail, 4.831 mi., East Providence and Barrington, CD 9/11.

BUILDINGS—LB & CA

▲ Turner Constr. Co., 38 Newbury St., Boston, Mass., CA Approx. $1,000,000. 21 story TELEPHONE ALTERATIONS and Radio Relay Tower, BOSTON, MASS. New England Telephone & Telegraph Co., 185 Franklin St., Boston, Mass. Bids Sept. 17. CD 9/10.

MIDDLE ATLANTIC

HEAVY CONSTRUCTION—BA

▲ NEW YORK—BA 10/23—Triborough Bridge & Tunnel Auth., Randall's Island, New York, Zone 35, Contr. TN3-, two tower piers at Bronx and Queens end for Throgs Neck Bridge, Bronx and Queens Counties. CD 1/20/55.

▲ NEW YORK—BA 10/30—Triborough Bridge & Tunnel Auth. Randall's Island, New York, Zone 35, Contr.TN-4A, Bronx anchorage foundation and superstructure for Throgs Neck Bridge,
Contr. TN-4B, Queens Anchorage foundation and superstructure for Throgs Neck Bridge. CD 1/20/55.

HEAVY CONSTRUCTION—LB & CA

▲ Poirier & McLane Corp., and Psaty & Fuhrman, 1010 Nepperhan Ave., Yonkers, N. Y., CA $5,844,700 Contr. 878, structures and equip. for sewage treatment plant, Yonkers Sewer Proj., in city of Yonkers, WHITE PLAINS, N. Y. Westchester Co., James C. Harding, comr., County Office Bldg., White Plains, N. Y. Grand total $6,397,908. Bids Aug. 28. CD 8/30, under LB.;
Michael Harmonay Corp., 567 Yonkers Ave., Yonkers, N. Y., CA $137,210, Contr. 878P, plumbing work (White Plains, N. Y.);
Herbert G. Martin, Inc., 77 Hawthorne Ave., Yonkers, N. Y., LB $267,218. Contr. 878 E, electrical work (White Plains, N. Y.);
Ardsley Constr. Co., Inc., 285 Madison Ave., and A. C. Kaestner, Inc., 331 Madison Ave., both New York, N. Y., CA $148,780 Contr. 878 H&V, heating and ventilating work (White Plains, N. Y.). CD 10/3/57.

▲ PENNSYLVANIA—Commonwealth Pa., 506 North Office Bldg., Harrisburg,
Pa.—Glasgow Inc., Glenside, Pa., CA $1,578,431, divided hy., rein.-con. 15,498 ft. 24 ft. wide each side of divisor, T.R. 22, Upper Macungie Twp, Lehigh Co.;
Pa.—Herbert R. Imbt, Inc., Box 155, State College, Pa., CA $1,027,018 overlaying, wid'n. 53,964 ft. existing road with crushed aggreg. base and bit. surf. 24 ft. wide, 3 bridges T.R. 940, Tobyhanna Twp., Monroe Co. Bids Aug. 16, awarded Sept. 16. CD 9/9, under LB.

BUILDINGS—LB & CA

▲ C. F. Braun & Co., 45 Rockefeller Plaza, New York 20, N. Y., Separate Contracts, $1,200,000. ENGINEERING OFFICE BLDG. on 40 acre tract at Diamond Hill Rd. and Mountain Ave., BERKELEY HEIGHTS, N. J. Voorhees, Walker, Smith & Smith, 101 Park Ave., New York 1, N. Y., consult. archts.

▲ Glendale Development Co., c/o Nat Spreckman, 19-13 Fair Lawn Ave., Fairlawn, N. J., Own Forces. $1,350,000. 45 HOMES forming 2nd section of Saddle River development at Saddle River Rd. and Morlot Ave., FAIRLAWN, N. J. CD 1/25.

▲† B. J. Lucarelli Co., Inc., 22 Orchard St., Jersey City, N. J., LB $1,741,600, 2nd increment, 120 unit, wood frame, row type HOUSE, outside utilities, roads, walks, etc., ENG-30-075-58-27., FORT MONMOUTH, N. J. U. S. Eng., 111 E. 16 St., New York 3, N. Y., bids Sept. 18, CD 9/10.

▲ Wayne Park, Inc., c/o Max & Morris Stein, 920 Main St., Hackensack, N. J., Own Forces. $2,275,000. 114 HOUSES forming 2nd and 3rd section of Wayne Park, Michael Rd., Wayne Twp., PREAKNESS, N. J., Carl Loven, 119 Rock Road, Glen Rock, N. J., archt.

▲ A. A. La Fountain, Inc., 1745 North Olden Ave., Trenton, N. J. CA $1,719,000, est. $1,000,000. (8 bidders), HOSPITAL addn., TRENTON, N. J. Mercer Hospital Bd. Trustees, 446 Belvue Ave., Trenton, N. J. Bids Sept. 10. CD 8/30.

▲ Branna Constr. Co., 625 Farmers Bank Bldg., Pittsburgh 22, Pa., CA $2,200,000, 2 story, 110,000 sq. ft., brick, concrete JUNIOR SENIOR HIGH SCHOOL, gymnasium, auditorium, HOMER CITY, PA. Laura Lamar Joint School Bd., Homer City, Pa. Bids July 30, awarded Aug. 28, CD 8/5, under LB.

▲ Gamble & Gamble Constr. Co., Bolivar, Pa. CA $1,130,950. JUNIOR-SENIOR HIGH SCHOOL, Portage Joint Schools, PORTAGE, PA. Pa. Pub. School Bldg. Auth., 101 S. 25 St., Harrisburg, Pa. Bids Aug. 13. CD 8/21, under LB.

SOUTH

HEAVY CONSTRUCTION—BA

▲ Ga., Atlanta—BA 10/28—Ernest J. Brewer, cty. purch. agt., City, City Hall, Zone 3, water treatment plant, incl. Div. 1, general structural and building work for raw water pumping station and water treatment plant, incl. 1,500 ft. raw water supply line outside plant pipe lines and drain lines and appurtenances; Div. 2, general mechanical work for plant operating equipment and instrumentation, incl. inside heavy operating piping and appurtenances; Div. 3, general mechanical work for raw water pumping station and filtered water pumping station incl. pumping units, electric power work, station; piping and appurtenances; Div. 4, steel wash water reservoir, and appurtenances. Plans deposit $125. Wiedeman & Singleton, 760 W. Peachtree St., N.W., engrs. adv-ENR 10/3. CD 4/30.

BUILDINGS—BA

▲ Fla., Daytona Beach—BA 10/15—HOUSING— Daytona Beach Housing Auth., Halifax Park, 100-unit, housing. $1,000,000. Plans deposit $100. Griffin & Gomon, Box 1671, archts. CD 9/17.

▲† S. C., Charleston—HOUSING—BA About 11/14—U. S. Air Force, Charleston Air Force Base, North Charleston, 600 Capehart housing units, Charleston Air Force Base, Inv. 49-605-58-1CH. $10,000,000. CD 7/23.

▲ VIRGINIA—Commonwealth of Va., Dpt. Hys., 1221 E. Broad St., Richmond, Bids opened 9/18,
Va.—Heckler Brothers Inc. Highland Springs Va., LB $532,852 (3 bidders), two-lane c-conc pavt. beginning 1.06 mi. east Int. Rte. 120 (Nelson St.) and ending 0.08 mi. east Int. Rte. 120 (Albemarle St.), Rtes. 29, 211, State Proj. 1700-05, Fed. Proj. U-101-1 (3), Arlington Co.;
Va.—Eckois Brothers, Inc., Drawer 869, Stanton, Va., LB $99,778 (6 bidders), bit. surf. treat. beginning 1.47 mi. north of Judith Creek and ending 1.39 mi. north of Eagle Eyrie, Rte. 501, State Proj. 2009-02, Fed. Proj. S-643 (4), Bedford Co.;
Va.—W. E. Graham & Sons, Box 268, Cleveland, N. C., LB $320,990 (5 bidders) b. conc. 10.82 mi. south of Hillsville and ending 4.08 mi. north of N. C. State line, Rte. 52, State Proj. 2017-05, Fed. Proj. F-025-1(1), Carroll Co.;
Va.—John A. Hall Co., Inc., Box 298, Roanoke, Va. and Paul E. Delp, Comers Rock, Va., LB $181,926 (6 bidders), var. soil aggreg., bit. surf. treat. 1.39 mi. north of N. Int. Rte. 673 and ending Int. Rte. 673 (E. of Grant), Rtes. 658; 730; 601; 668, State Proj. 1338-13-22-25, Fed. Proj. S-155(6), Grayson Co.;
Va.—Ames & Webb, Inc., Box 4055, Norfolk 2, Va., LB $1,353,267 (12 bidders), two-lanes c. conc. pavt. and 2 bridges beginning 3.79 mi. south Int. 58 and ending 1.31 mi. south Int. Rte. 58, Contr. 1, Rte. 401, State Proj. 8040-02-03-13-14-28, Fed. Proj. I-201-1(9), Greensville Co.;
Va.—Adams Constr. Co., Box 60, Roanoke, Va., LB $128,026 (5 bidders), soil aggreg. 4.75 mi. beginning 0.05 mi. west Int. Rte. 691 (near Hiltons) and ending 0.54 mi. west Washington Co. line, Rte. 614, State Proj. 1384-22, Fed. Proj. S-1039 (1), Scott Co.;
Va.—Moore Brothers Co., Inc., Box 258, Verona, Va., LB $1,306,231 (7 bidders), b. conc. pavt. and bridge 6.23 mi. beginning 1.74 mi. east of ECL Wytheville and ending 0.77 mi. east of Int. Rte. 52. Rte. 11, State Proj. 1698-13-17-18-19, Fed. Proj. IN-04-2(4); (7), Wythe Co.;
Va.—Guy H. Lewis & Son, Box 128, McLean, Va., LB $225,194 (5 bidders), b. conc. 0.65 mi. beginning 0.05 mi. east of N. Roosevelt St. and ending Int. N. Fairfax Street, Rte. 7, State Proj. 2729-70, Fed. Proj. U-111-1(1), City of Falls Church;
Va.—Cancelled bids to have been opened Sept. 18, soil aggreg., bit. top, service roads and grading, draining main line 2.13 mi. beginning 3.73 mi. east Tenn. State line and ending 4.97 mi. east Tenn. State line and NCL Bristol, 0.89 mi. north NCL Bristol (Spur line), Contr. 1, Rtes. 402, 407, State Proj. 8095-0, 8395-01, Fed. Proj. I-202-1(1), 207-1(1), Washington Co., Will re-advertise. CD 9/11.

BUILDINGS—LB & CA

▲ Babcock & Wilcox, 161 E. 42 St., New York, N. Y., CA Total est. $10,000,000, BOILER and related generating equipment at research and development center near ROANOKE, VA. Thompson Products, Inc., 23555 Euclid St., Cleveland, O. McConathy, Hoffman & Assocs., Inc., 150 Broadway, New York, N. Y., engr. CD 10/5/56.

▲ Geo. A. Fuller Co., 1 Peachtree Bldg., Atlanta, Ga., LB $4,175,000. OFFICE for State Dpt. P. Health, ATLANTA, GA. State Office Bldg. Auth., State Capitol, Atlanta, Ga. Bids Sept. 4. CD 8/12.

▲ McDonough Constr. Co., 7 Baltimore Place, N. W., Atlanta, Ga., LB $4,278,000 low rent HOUSING, Ala. 2-4, MOBILE, ALA. Mobile Housing Bd., 1555 Eagle Dr., Mobile, Ala. Bids Sept. 12. CD 8/21.

MIDDLE WEST

BUILDINGS—BA

▲ Ill., Chicago—SCHOOL—BA 10/14—Bd. Educ., 228 N. LaSalle St., 2 story, brick, stone, William J. Bogan High School, SE corner 79 St., and Pulaski Rd. $3,000,000. Bids Oct. 14. CD 10/9/56.

▲ Ill., Waukegan—SCHOOL—BA 10/15—Waukegan Twp., School Dist. 119, 1011 Washington St., high school bldg., W. side near Weiss Field. $4,500,000. Ganster & Hennighausen, 222 Washington St., archts. CD 10/26.

▲ Ill., Chicago—APARTMENT—BA 10/17—University of Chicago, Midway and Woodlawn Sts., 8 story, 81 unit apartment, 5701 So. Drexel Blvd. $1,100,000. Burnham & Hammond, 53 W. Jackson Blvd., archts. CD 1/30.

HEAVY CONSTRUCTION—LB & CA

▲ Russell F. Davis, 10 Concord Rd., Lafayette, Ind., CA $96,277, Contr. A-2; CA $132,325, Contr. A-3; CA $113,536, Contr. A-4, distr. sys. imprvs., LAFAYETTE, IND. Dpt. Waterworks, Lafayette, Ind., Grand total $2,006,943. Bids Sept. 17. CD 8/8;
Town & Blank, Inc., Michigan City, Ind. CA $1,061,225, Canal Street Pumping Station, Contr. B-1; CA $192,480, Columbian Park Pumping Station, Contr. B-2, (Lafayette, Ind.);
Chicago Bridge & Iron Co., 332 S. Michigan St., Chicago, Ill., CA $451,100, elevated steel tanks, Contr. C, (Lafayette, Ind.)

▲ ILLINOIS—Dpt. P. Wks. & Bldgs., Div. Hys., Centennial Bldg., Springfield. Bids opened 9/17.
Ill.—J. M. Corbett Co., 2500 So. Corbett, Chicago, Ill., LB $440,600 (5 bidders), 3 span WF grade separation on Damen Ave. at Northwest Expressway, Chicago, Proj. I-02-2(22), District 10, Cook Co.; LB $351,189 (7 bidders), 3 span WF-beam grade separation on Hamlin Ave. at intersection of Northwest Expressway in Chicago, Proj. I-02-2(38), District 10, Cook Co.;
Ill.—M. J. McDermott Co., 30 N. LaSalle, Chicago, Ill., LB $726,066 (5 bidders), two-3 span grade separation structures over Irving Park Road, Northwest Expressway

PROJECTS COVERED

By Size

Construction projects here reported cover the United States and Canada, are of these minimum sizes or larger: water supply, earthwork, waterways $44,000; other public works $73,000; industrial buildings $93,000; other buildings $344,000. Also Foreign projects of $100,000 and more in size of interest to American contractors.

By Regions & Classes of Construction
(In order of Listing)

BIDS ASKED
LOW BIDDERS
CONTRACTS AWARDED

New England	Middle West
Middle Atlantic	West of Mississippi
South	Far West

PROPOSED WORK

Water Supply	Public Buildings
Sewers, Waste Disposal	Mass Housing
Bridges	Commercial Buildings
Streets & Roads	Industrial Buildings
Earthwork, Waterways	Unclassified

In These Stages

PROPOSED WORK: Before and including appointment of engineers or architects.
BIDS ASKED: BA (new announcements only). For full calendar, see also preceding issues.
SOON LETS CONTRACT: SLC
LOW BIDDERS: LB On jobs below $500,000 in value all low bidder news will be the final reports published on the projects involved except where award is not made to the low bidder. In this case, a supplementary contract award report will be published.
CONTRACTS AWARDED: CA Except awards to low bidders previously reported in low bidder stage.
CD dates shown are of Construction Daily issue in which last previous report was published.
OWNERS, ENGINEERS, ARCHITECTS, CONTRACTORS are invited to report their new jobs for listing in these reports when they meet or exceed the size minimums shown above. Address these news releases to J. A. Mahoney, REPORTS, ENGINEERING NEWS-RECORD, 330 W. 42 St., New York 36, N. Y.

Symbols and Abbreviations Include:

†	Federal Government
▲	Project of $1,000,000 or over.
ENR	Engineering News-Record
CD	Construction Daily

For additional reports see Construction Daily.

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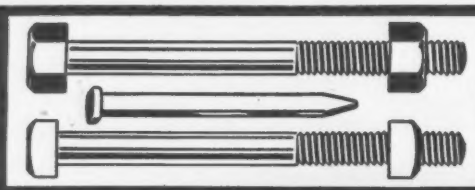
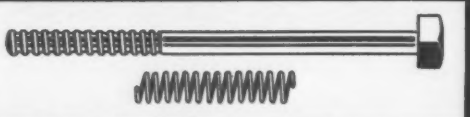
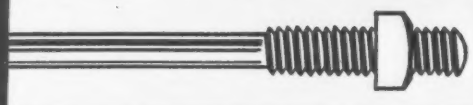




BOLTS, SCREW ANCHORS, TIE RODS, UPSET RODS, STRAPS, WASHERS, STAPLES, DOCK SPIKES, MANHOLE HARDWARE, ETC.



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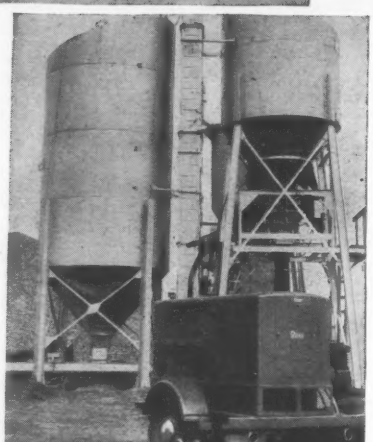
ELECTRIC PLANT NEWS

On-site cement plant operates with Onan power

35KW Onan Electric Plant powers 15 H.P., 5 H.P. and two 2 H.P. motors, vibrator, controls, welder and lights

It's a completely electrified operation . . . even to electric lights in the mobile office nearby . . . yet this bulk cement plant is far distant from the utility highline. The Onan heavy-duty, water-cooled electric plant runs continuously during working hours with a minimum of servicing. It has the capacity to provide electricity for miscellaneous lights, tools, motors and communications, too.

Other A.C. models: 500 to 75,000 watts. Also D.C. and battery charging units.



Series 35ED Onan Plant, powered by 8-cylinder gasoline engine, provides all the electricity needed. Trailer mounted, it is easily moved from site to site. Weatherproof housing.

See your Onan distributor or write for literature

D. W. ONAN & SONS, INC.

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and R. R. grade separation, Proj. I-02-2(42), District 10, Cook Co.; LB $1,067,076 (2 bidders), WF-beam grade separation structure over Congress St., B. & O. C. T. RR and C. T. A. tracks in Chicago, Proj. I-01-4(31), District 10, Cook Co.;

Ill.—**Paschen Contg. Inc.**, 2739 Elston Ave., Chicago, Ill., LB $349,896, 5 span WF-beam grade separation over Lombard Ave. and Congress Expressway in Oak Park, Proj. I-01-4 (1), F. A. I. Rte 1, District 10, Cook Co.; LB $1,247,963 (2 bidders), 3 span and 2 span grade separation on Harlem Ave. at Congress St. Expressway, Proj. I-01-4(42), F. A. I. Rte. 1, District 10, Cook Co.;

Ill.—**American Bridge, U. S. Steel**, 208 So. LaSalle St., Chicago, Ill., LB $679,016 (5 bidders), steel for WF-beam RR subway in Forrest Park, Proj. I-01-4(47), F. A. I., Rte. 1, District 10, Cook Co.;

Ill.—**Wednagel & Co., Inc.**, 600 W. Cermak Rd., Chicago, Ill., LB $140,202 (6 bidders) steel for RR subway over Des Plaines Ave. and Congress Expressway, Proj. I-01-4(45), F. A. I., District 10, Cook Co.;

Ill.—**M. Hoeffken Co. & Hoeffken Bros., Inc.**, 222 W. 8 St., Belleville, Ill., LB $476,740 (2 bidders), 3 WF-beam separation structures at FA-Rte. 14 and US 460 west of Belleville, Proj. U-110(25), District 8, St. Clair Co.;

Ill.—**McCann & Co.**, 2145 Devereaux St., Springfield, Ill., LB $184,349 (1 bidder), single span subway structure on FA Rte. 132 northeast of Alton, Proj. UG-380(1), District 8, Madison Co.;

Ill.—**Culberson Constr. Co.**, Pana, Ill., LB $147,235 (3 bidders), two-3 span deck grade separation on F. A. I. Rte. 8 east of Lawrenceville, Proj. I-08-4(9), District 7, Lawrence Co.;

Ill.—**Industrial Constr. Co.**, 3050 4th Ave., Minneapolis, Minn., LB $566,019 (2 bidders), erect structural steel and floor for 13 span bridge on FA Rte. 178 at Peru, Proj. UF 254(4), District 13, LaSalle Co.;

Ill.—**Bethlehem Steel**, Bethlehem, Pa., LB $276,078 (3 bidders), steel for 7 span bridge on FA Rt. 192 south of Montgomery, Proj. U-280(3), District 1, Kendall Co.;

Ill.—**A. J. Walker Constr.**, Maltoon, Ill., LB $109,121 (2 bidders), I-beam bridge west of Union Center; 0.59 mi. grav. surf. course on F. A. S. Rte. 700, Proj. S-767(1), District 5, Cumberland Co.;

Ill.—**Valley Builders, Inc.**, Spring Valley, Ill., LB $205,816 (1 bidder), widen 5 span girder bridge on US 52 near Savanna, Proj. F-FG-7(20), District 4, Bureau Co.;

Ill.—**H. H. Mass Constr. Co.**, Algonquin, Ill., LB $183,711 (2 bidders), 3 span steel plate bridge on US 52 near Savanna, Proj. F-39 (5), District 2, Carroll Co.;

Ill.—**Merritt-Chapman-Scott Corp., Fitzsimmons Connell Div.**, 261 Madison Ave., New York, N. Y., LB $320,000 (1 bidder), combination bid, grade separation on F. A. I. Rte. 5 in East Peoria, Proj. I-05-4 (1), District 4, Tazewell Co. CD 9/4.

▲ **Santucci Constr. Co.**, 5025 Church St., Skokie, Ill., CA $1,194,127, auxiliary outlet sewers, Roscoe St. between Melvina and Sayre Ave., in Sayre Ave. between Roscoe and Belmont, in New England Ave. from Roscoe to Irving Park Road and in Grace St. between New England and Harlem, CHICAGO, ILL. City, City Hall, Chicago, Ill. Bids Aug. 8. CD 8/14, under LB.

BUILDINGS—LB & CA

▲ **Campbell Lowrie & Lautermilch**, 400 W. Madison St., Chicago, Ill., CA $2,500,000, 2 story, MFG. PLANT addn., 1134 Indianapolis Blvd., HAMMOND, IND. American Maize Products Co., 113th and Roby Sts., Hammond, Ind. Shaw, Metz & Dolio, 208 S. LaSalle St., Chicago, Ill., archts.

▲ **George Wallach Co.**, 3 W. Chicago Ave., Oak Park, Ill., Own Forces. $1,320,000, 88 HOMES, ADDISON, ILL. James Chiaro & Assocs., 17 N. 5 Ave., Maywood, Ill., archts.

▲ **C. & I. Bldrs.**, 10307 S. Western Ave., Chicago, Ill., Own Forces, $10,000,000, 400 HOMES, paving, sewers and water mains, Serena Hills, CHICAGO, ILL.

▲ **Arthur G. McKee Co.**, 2300 Chester Ave., Cleveland, O. CA $4,000,000, ORE YARD STORAGE, 11200 S. Torrence Ave., CHICAGO, ILL. Interlake Iron Corp., Union Commerce Bldg., Cleveland, O.

▲ **Batson Cook Co.**, West Point, Ga., CA $1,000,000, 2 story corrugated box mfg. PLANT and OFFICE BLDG., Grand Ave., FRANKLIN PARK, ILL. Inland Container Corp., 700 W. Morris St., Indianapolis, Ind. CD 8/1.

▲ **Riverview Home Bldrs.**, Box 87, McHenry, Ill., Own Forces. $1,200,000, 100 HOMES, Holiday Hills, McHENRY, ILL.

▲ **J. Emil Anderson & Son, Inc.**, 1809 W. Balmoral Ave., Chicago, Ill., CA $1,500,000, 1½ story brick WAREHOUSE and OFFICE, 7420 Lehigh Ave., NILES, ILL., Revere Electric Mfg. Co., 6009 N. Broadway, Chicago, Ill. Arthur M. Heda, 1809 W. Balmoral St., Chicago, Ill., archt.

▲ **C. A. Hemphill Bldrs.**, 3935 Simpson St., Evanston, Ill., Own Forces, $1,200,000, 68 HOMES, paving, Hunter Road and Wilmette Ave., WILMETTE, ILL. Edward Marks, 3935 Simpson St., Evanston, Ill., archt.

▲ **A & W Bldg. Co.**, 1010 Washington Bldg., Detroit 26, Mich., CA $10,400,000. 400 brick HOMES, Birmingham Farms, Telegraph, Maple and 14-Mile Rd., BLOOMFIELD, MICH. Bloomfield Real Estate Co. (agent), 6435 Telegraph Rd., Birmingham, Mich.

▲ **Howard T. Keating Co.**, Adams and Pontiac Rd., Rochester, Mich. Owner Builds. $3,000,000. Spring Hill RESIDENTIAL DEVELOPMENT, incl. 107 homes on ½ acre site, north of Crooks Rd. opposite Mich. State University site, branch university, ROCHESTER, MICH.

(Continued on page 78)

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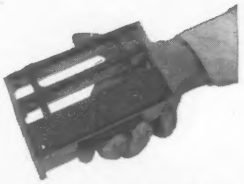

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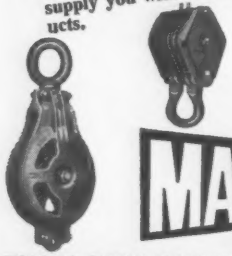

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(Continued from page 76)

▲ **Berman Homes, Inc.**, 1217 Penobscot Bldg., Detroit, Mich., Owner Builds, $2,500,000. 170 brick HOMES, Eden East, easterly and south side 12-mile Road, ROSEVILLE, MICH.

▲ **Bert Gordon Realty Co.**, 18986 Schaefer St., Detroit, Mich., Owner Builds, $3,500,000. HOMES, Van Dyke Estates, Van Dyke and 11-Mile Rd., VAN DYKE, MICH.

▲ **S P M**, 20445 Marx St., Detroit, Mich., CA Est. $2,000,000 Lorraine HOUSING subdivision, Lorraine and 12-Mile Rd., WARREN, MICH. H. A. Adrodowski, 8829 Van Dyke St., Detroit 13, Mich.

WEST OF MISSISSIPPI

BUILDINGS—BA

▲ **Colo., Denver**—SCHOOL—BA 10/9—School Dist. No. 1,414 14 St., Rishel Junior High School, Valverde area, $2,000,000. Extended date. Gordon D. White & Charles N. Overholt, 615 Columbine St., Denver, Colo., engrs.-archts. CD 9/3.

▲ **Ark., Little Rock**—UNVERSITY—BA 10/24—University of Arkansas Medical Center, 10 story dorm. bldg. for single and married students at medical center, incl. student union bldg. $1,800,000. Erhart Eichenbaum, Rauch & Blass, 201 Chester St., archts. CD 9/6/56.

BUILDINGS—SLC

▲ **Iowa, Waterloo** — SCHOOL — Catholic Parishes of Waterloo, St. Edwards' Parish Hall, soon lets contract Columbus high school, $1,000,000. Flinn & Saito, 512 Lafayette Bldg., archts. CD 7/22.

HEAVY CONSTRUCTION—LB & CA

▲ **TEXAS**—State Hy. Comn., Austin, Bids opened 9/18,
Tex.—**John F. Buckner & Sons and Texas Bitulithic Co.**, P.O. Box 76, Cleburne, Tex. LB $1,281,249. flex. base, hot mix b. conc. pavt. 28.196 mi. Hy. US 81 & SH 22, Proj. I. 113 (20) F. 113 (21 & F. 1060) (2), Hill Co.;
Tex.—**Ballenger Constr. Co.**, P.O. Box 943, San Benito, Tex. LB $308,977. grading, structures, base and surf. 11.258 mi. Hy. FM 506, Proj. S. 393 (4), Cameron Co.;
Tex.—**Menefee Brothers**, P.O. Box 431, Center, Tex. LB $98,993. grading, structures, base and surf. 3.83 mi. Hy. FM 2097, Proj. R. 2271-1-1, Tyler Co.;
Tex.—**Henry L. Stafford**, P.O. Box 1047, Lubbock, Tex. LB $416,738. flex. base, one course surf. treat., hot mix c. conc. pavt. 19.35 mi. Hy. SH 51, Proj. C 227-2 & 3-11 & 8, Lamb Co. CD 9/3.

▲ **TEXAS**—State Hy. Comn., Austin, Bids opened 9/18,
Tex.—**Austin Bridge Co.**, P.O. Box 1590, Dallas, Tex., LB $165,433, foundation course, two course surf. treat. 1.179 mi. Hy. St. 29, Proj. C. 396-5-5, Menard Co.; LB $169,238, grading, structures, base and surf. 6.972 mi. Hy. FM 884, Proj. S 296(1), DeWitt and Goliad Counties;
Tex.—**R. N. Adams**, P.O. Box 581, Kaufman, Tex., LB $362,291, Proj. S. 2177(1), Dallas Co.;
Tex.—**W. R. Aldrich & Co.**, P.O. Box 1751, Baton Rouge, La., LB $273,787, flex. base and one course surf. treat. 6.503 mi. Hy. SH 73, Proj. I. 1052(42), Chambers Co.;
Tex.—**Wendel Constr. Co.**, P.O. Box 231, El Campo, Tex., LB $149,066, grading, structures, base and surf. 5.329 mi. Hy. FM 1300, Proj. S. 2215(1), Wharton Co.;
Tex.—**Austin Road Co.**, P.O. Box 1590, Dallas, Tex., LB $324,739, flex. base, concrete pavt. 1.002 mi. Hy. FM 1764, Proj. C. 1607-1-3, Galveston Co.;
Tex.—**Robert E. McLee, Gen. Contractors**, P.O. Drawer 562, El Paso, Tex., LB $2,017,320, grading, structures 10.882 mi. Hy. 80, Proj. I. 1111(1), El Paso Co. CD 8/23.

BUILDINGS—LB & CA

▲ **Spiegelberg Constr. Co.**, 259 W. Fremont St., Laramie, Wyo., CA $1,802,781, 2 story, bsmnt., 120x337 ft. State Hy. OFFICE BLDG., CHEYENNE, WYO. State Hy. Dpt., State Office Bldg., Cheyenne, Wyo. Bids Aug. 22. CD 8/30.

FAR WEST

HEAVY CONSTRUCTION—BA

▲ **Calif., Los Angeles**—BA 10/18—Los Angeles Co. Flood Control Dist., 12250 Alcazar St., Storm Drain Bond Issue Proj. 16 Cerritos-Maplewood Storm Drain. $2,466,000. CD 11/7/52.

BUILDINGS—BA

▲ **Calif., Los Angeles**—SCHOOL—BA 10/15—Los Angeles Bd. Educ., 1425 S. San Pedro St., class room bldgs. at Stevenson Junior High School. $1,000,000. CD 4/26.

▲ **Calif., Santa Ana** — HOSPITAL — BA 10/30 — Bd. Suprvs. Orange Co., Courthouse, Santa Ana, 3 story, 50,254 ft., rein.-con. phychiatric bldg., Orange Co. General Hospital. $1,260,000. Plans deposit $100. William & Faulkner, Spurgeon Bldg., archts. CD 12/12.

HEAVY CONSTRUCTION—LB & CA

▲ **K. L. Goulter & Son**, 3419 16 Ave. W., Seattle, Wash., LB $1,509,290 (11 bidders) relocating forest service west side road, dam to Packard Creek, Hills Creek Reservoir, Lane Co., CIVENG-35-026-58-18, OREGON, U. S. ENG. Pittock Block, Portland, Ore. Bids Sept. 17. CD 8/13.

BUILDINGS—LB & CA

▲† **Page City Constructors**, Bakersfield, Calif., LB $1,366,750 est. $2,050,000 (9 bidders) Sch. No. 1,

(Continued on page 80)

INGRAM

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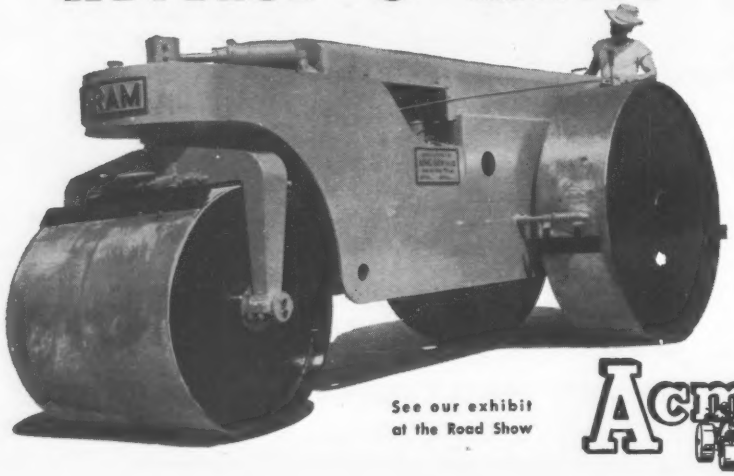

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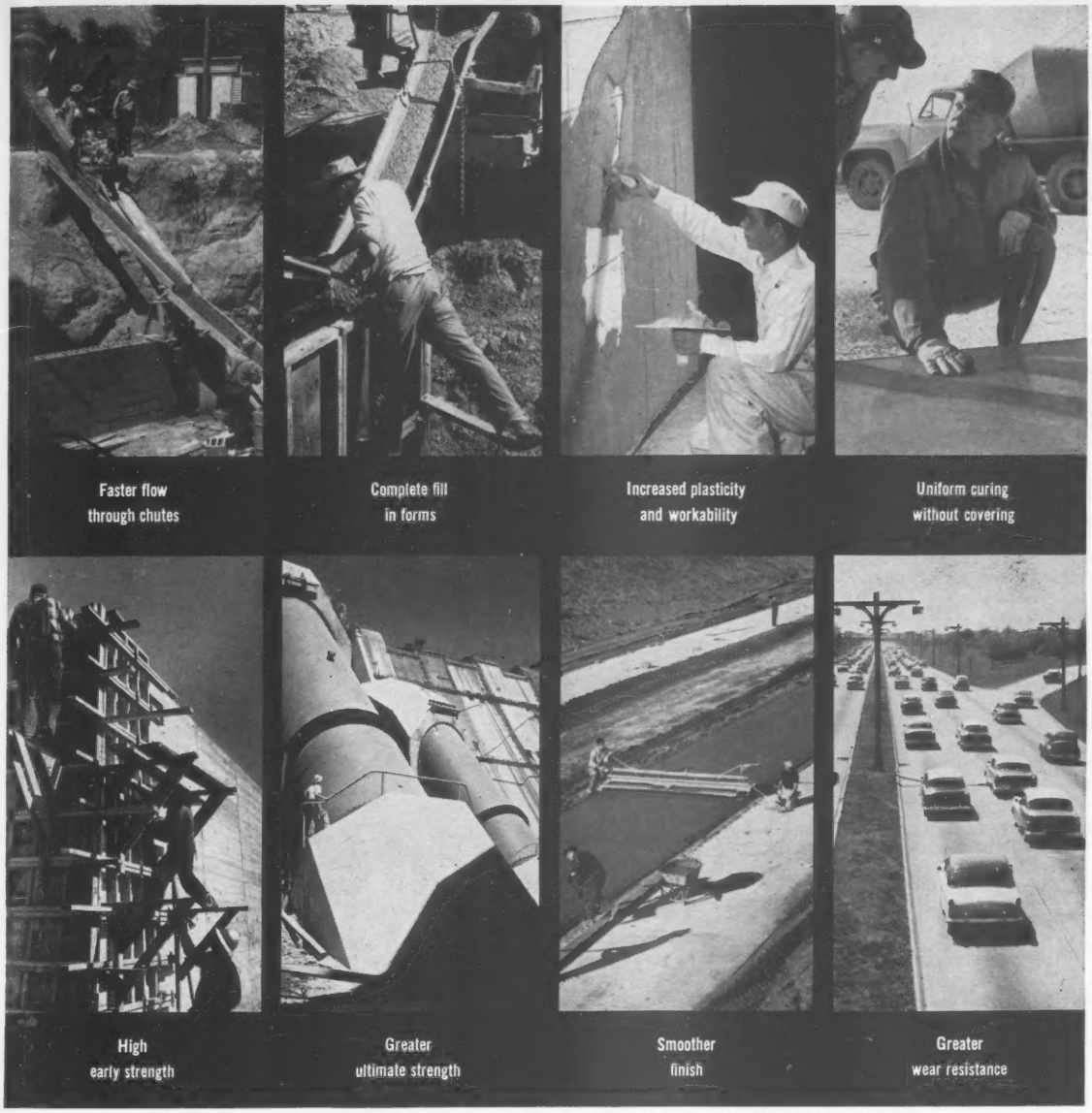

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(Continued from page 78)

one hundred 3 bedroom RESIDENCES, near Lees Ferry, Colorado River Storage Proj., Spec. DC 4945, ARIZONA. Bureau Reclamation, Dpt. Interior, Bldg. 1A, Denver Federal Center, Denver, Colo. Bids Sept. 12. (Correction—Low Bidders). CD 9/17, under LB. Gordon Fields Builders, Inc. & Cal Constr. Co., San Bernardino, Calif., LB $1,158,250 est. $2,043,000 (9 bidders) one hundred 3 bedroom residences for Page, (Arizona)., Co.

▲ Viesko & Post, Box 69, Salem, Ore., C $2,535,712. general construction, INTERMEDIATE PENAL INSTITUTION, PORTLAND, ORE. Oregon Bd. Control, Capitol, Salem, Ore. Bids Aug. 27, awarded Sept. 13. CD 9/10, under LB.

▲ E. C. Nesser Constr. Co., 4822 West Jefferson Blvd., Los Angeles, Calif., LB $2,336,734, est. $2,000,000 (8 bidders) 133,000 sq. ft., frame, stucco Porter HIGH SCHOOL, Granada Hills, LOS ANGELES, CALIF. Los Angeles Bd. Educ., 1425 S. San Pedro St., Los Angeles, Calif. Bids Sept. 18. CD 8/27.

▲ Christensen & Lyons, 3454 Harlan St., Oakland, Calif., LB $1,419,919 (10 bidders) DISTRIBUTION CENTER, SOUTH SAN FRANCISCO, CALIF. Zellerbach Paper Co., 534 Battery St., San Francisco, Calif., J. Y. Long Co., 132-9th St., Oakland, Calif., engr.

CANADA

HEAVY CONSTRUCTION—LB & CA

▲ Miron Constr. Ltd., 2201 Cote St. Michel Rd., and J. D. Stirling Ltd., 940 Cote de Liesse Rd., both Montreal, Que., CA $1,074,877. 1,000 ft. tunnel under Canadian Pacific Railway tracks at Cremazie Blvd. on Metropolitan Blvd. west of Park Ave., MONTREAL, QUE. City, City Hall, Montreal, Que. Bids Aug. 19, awarded Sept. 13. CD 8/29, under LB.

BUILDINGS—LB & CA

▲ Colonia Developments Corp., 6971 St. Denis St., Montreal, Que., Owner Builds. $1,500,000. 1,500 semi-detached custom built bungalow HOUSING, Hys. 3 and 4, CHATEAGUAY, QUE.

▲ Angus Robertson Ltd., 5035 Western Ave., Montreal, Que., CA Est. $1,500,000. 140,000 sq. ft., rein.-con., structural steel frame, brick PLANT, MONTREAL, QUE. Canadian Steel Wheel Ltd., 5227 Notre Dame St. E., Montreal, Que. Awarded Sept. 13. CD 2/5.

LATIN AMERICA

BUILDINGS—LB & CA

▲ Frederick Snare Overseas Corp. (Frederick Snare Corp.), 233 Broadway, New York, N. Y., U.S.A. CA Est. $75,000,000. PLANT for mining and concentrating nickel cobalt ores on Bay, CUBA, Freeport Sulphur Co., Freeport, Tex., U.S.A.

AMERICANS ABROAD

BUILDINGS—LB & CA

▲† Entrecanales & Metcalf & Hamilton, Madrid, Spain, LB $1,956,400. NAVAL MAGAZINE FACILITIES (CAR-3) CARTEGENA, SPAIN. Bureau Yards & Docks, Dpt. Navy, 18 St. and Constitution Ave. N. W., Wash. 25, D. C., U. S. A. Bids Aug. 14. CD 7/23.

U. S. POSSESSIONS

HEAVY CONSTRUCTION—BA

▲ T. H. Molokai—BA 10/24—Hawaii Water Auth. for Unit I, c/o Mgr.-Chief Engineer, Honolulu, T. H., 27,000 lin. ft. water conveyance and development tunnels, drilling wells, misc. pipe lines and diversion structures and appurtenant works. Plans deposit $100 for first set, $25 for each addnl. set. Jacobs Assocs., 503 Market St., San Francisco 5, Calif., engrs. and consultants.

FOREIGN

HEAVY CONSTRUCTION—BA

▲ Burma—BA 11/2—Chairman, Bd. Management for the Port of Rangoon, P. O. Box No. 1, Rangoon, Contr. No. 2, development of Rangoon Port, Rangoon Harbor Project. Plans deposit $275 per set from owner or $280 per set from Sir Alexander Gibb & Partners, Queen Anne's Lodge, Westminster, London, S.W.1, Board's consulting engineers. Extended date. CD 8/9.

PROPOSED PROJECTS

SEWERS, WASTE DISPOSAL

▲ O., Warren—Comrs. Trumbull Co., Court House, sewage treatment plant and sewers in Mineral Ridge area, $2,150,000, Snyder, McLellan & Assoc., Hillsboro, Ind., consult. engrs. Carl W. Ziegler, co. engr. Bids soon.

EARTHWORK, WATERWAYS

▲ Arizona and Utah—Bureau Reclamatino, Dpt. Interior, Bldg. 1A, Denver Federal Center, Denver, Colo., Glen Canyon Unit, continuation of constr. on Glen Canyon Dam and Colorado River Bridge and for completion of right diversion tunnel and Bitter Springs Access Hy. $19,418,687 appropriated. CD 4/27/56.

▲† California—Bureau Reclamation, Dpt. Interior, Denver Federal Center, Bldg. 53, Denver, Colo., continue constr. of Casitas Dam, Robles Diversion Dam and Robles-Casitas Diversion Canal, Ojai Valley and Rincon areas, Ventura River Proj. $12,002,148 appropriated. CD 4/14/44.

▲† California—Bureau Reclamation, Dpt. Interior, Denver Federal Center, Bldg. 53, Denver, Colo., Central Valley Proj., continue constr. Trinity Dam and Clear Creek Tunnel and relocating county roads in Trinity area, start work on temporary fish trapping facilities at Lewiston, continue work on Shafter Wasco Irrigation Dist. distr. sys., for Stone Corral Irrigation Dist. distr. sys. in Friant-Kern Canal area. $25,454,858 appropriated. CD 4/14/44.

▲† California—Bureau Reclamation, Dpt. Interior, Denver Federal Center, Denver, Colo., Vaquero Dam and acquire rights-of-way, Santa Maria Proj., completion anticipated by 1959 when this proj. will supply supplemental irrigation water for 35,700 acres and a full supply of 3,000 acres. $6,995,000 appropriated. CD 10/2/52.

† California—Bureau Reclamation, Dpt. Interior, Denver Federal Center, Bldg. 53, Denver, Colo., Solano Proj., complete Monticello Dam and continue constr. Putah Diversion Dam and Putah South Canal, $5,109,000 appropriated. CD 4/14/44.

▲ Connecticut—State P. Wks. Dpt., 165 Capitol Ave., Hartford, flood control facilities, storage reservoirs, deepening, widening, and straightening water courses of Pequabuck River, Bristol, $2,545,000.

▲† Missouri—U. S. Eng., 1709 Jackson St., Omaha 2, Neb., imprv. Missouri River, Kansas City to mouth. $5,000,000 appropriated.

▲† Montana—Bureau Reclamation, Dpt. Interior, Denver Federal Center, Bldg. 53, Denver, Colo., Helena Valley Unit, Missouri River Basin Proj., dam and regulating reservoir, pumping plant at Canyon Ferry Dam, 2.8 mi. long tunnel and first eight miles of canal near Helena, 23 mi. main canal and laterals and drains, $4,770,000 appropriated.

▲† Nebraska and Kansas—Bureau Reclamation, Dpt. Interior, Denver Federal Center, Bldg. 53, Denver, Colo., Bostwick Division, completion of minor items of work in connection with the Franklin, Naponee, Franklin South Side and Superior-Courtland irrigation sys. in Nebraska, for completing about 42 mi. of courtland irrigation canals and related laterals in Kansas; and construction progress on about 43 mi. canals and related laterals also in Kansas to permit irrigation of an addnl. 11,600 acres. $1,471,000 appropriated.

▲† New Mexico—Bureau Reclamation, Dpt. Interior, Denver Federal Center, Denver, Colo., channelization Imprvs will be extended in Socorro area, channel Imprvs in Belen an Hot Springs area, Middle Rio Grande Project. $3,814,000 appropriated. CD 9/7/44.

▲† Oregon—Bureau Reclamation, Dpt. Interior, Denver Federal Center, Denver, Colo., continuing work on Deadwood Tunnel, Howard Prairie Dam and Reservoir, Howard Prairie delivery canal, 16,000-kw. Green Springs power plant, constr. Keene Creek Dam and reservoir, the Green Springs power conduit, Emigrant Dam and reservoir, and various canals and laterals, Rogue River Basin Proj., Talent Division $6,189,510 appropriated; completing betterment of main canal used jointly by Medford Irrigation District and Rogue River Valley Irrigation District and to continue replacing and betterment items on distribution facilties of individual districts, Rogue River Basin Proj. $205,000 appropriated.

▲† Utah and Wyoming—Bureau Reclamation, Dpt. Interior, Denver Federal Center, Denver, Colo., constr. Flaming Gorge Dam as well as contract for power plant facilities, Flaming Gorge Unit, $4,831,433 appropriated.

▲† Utah—Bureau Reclamation, Dpt. Interior, Bldg. 53, Denver Federal Center, Denver, Colo., constr. Willard Dam and reservoir; Weber aqueduct pumping plant and discharge line; Woods Cross and West Farmington Trunk Lines; Sand Ridge, East Layton, and Val Verda pumping plants and appurtenant electrical equipment, Uintah Bench, West Farmington, and Woods Cross Laterals and Wanship Reservoir basic recreational facilities. Gateway and Wanship power facilities and Pineview Reservoir recreational facilities, Weber Basin Proj. $7,434,735 appropriated. CD 8/4/52.

▲† Washington—Bureau Reclamation, Dpt. Interior, Denver Federal Center, Denver, Colo., completing laterals and pumping plants; spillway lighting facilities at Grand Coulee will be completed; constr. will begin on the 5,300 cubic-foot-per-second Esquatzel diversion canal, a joint flood control channel and irrigation wasteway, near Pasco, $13,850,000 appropriated. CD 9/10/56.

▲† Wyoming—Bureau Reclamation, Dpt. Interior, Denver Federal Center, Denver, Colo., completing Glendo Dam, reservoir, powerplant of 24,000 kw. capacity and switchyard, constr. will continue on Fremont Powerplant and switchyard, Glendo Unit, Missouri River Basin, $9,901,000 appropriated. CD 9/10/56.

AIRPORTS

▲† Ala., Selma—AIR BASE IMPRVS.—U. S. Eng., 2301 Grant St., Mobile, operational and training facilities and land acquisition, Craig Air Force Base. $2,193,000.

▲† Ark., Blytheville—AIR BASE IMPRVS.—U. S. Eng., P. O. Box 867, Little Rock, operational and training facilities, maintenance facilities, supply facilities, troop housing, community facilities and land acquisitions, Blytheville Air Force Base, $11,510,000. CD 12/1/53.

▲† Calif., Beale Air Force Base—AIR BASE IMPRVS.—U. S. Eng., 1209 8th St., Sacramento, operational and

(Continued on page 85)

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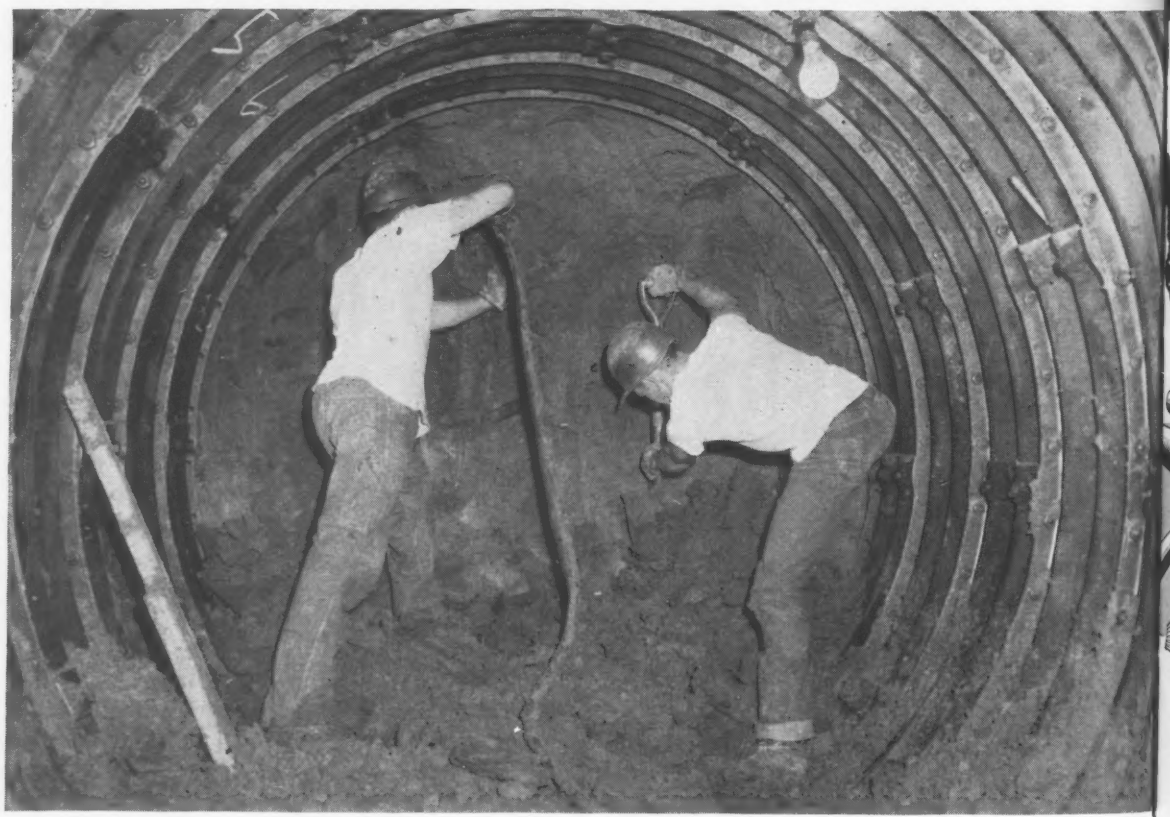

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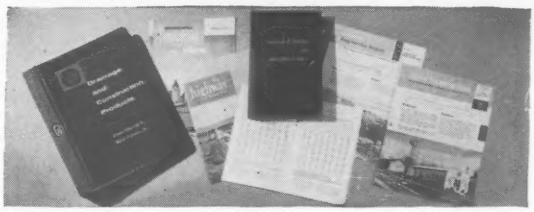

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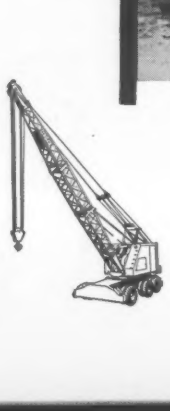

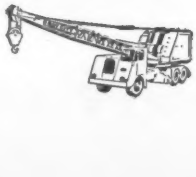

(Continued from page 80)

training facilities, maintenance facilities, supply facilities and utilities and ground imprvs., $7,458,000. CD 1/14/52.

▲† **Calif., Castle Air Force Base**—AIR FORCE BASE IMPRVS.—U. S. Eng., 180 New Montgomery St., San Francisco, maintenance and supply facilities, troop housing, utilities and ground imprvs., land acquisition and real estate imprvs., Castle Air Force Base. $2,076,000. CD 8/23/56.

▲† **Calif., El Toro**—AIR STATION IMPRVS—Eleventh Naval Dist., Commandant, 937 Harbor Dr., San Diego, operational facilities, Marine Corps Air Station, $3,620,000. CD 8/27/56.

▲† **Calif., March Air Force Base**—AIR BASE IMPRVS.—U. S. Eng., 751 S. Figueroa St., Los Angeles, operational and training facilities, and troop housing. $2,347,000. CD 8/24/56.

▲† **Calif., Miramar**—NAVAL AIR STATION IMPRVS.—Eleventh Naval Dist., Commandant, 937 Harbor Dr., San Diego, operational facilities Naval Air Station. $3,401,000. CD 8/27/56.

▲† **Calif., Mojave**—AIR STATION IMPRVS.—Eleventh Naval Dist., commandant, 937 Harbor Dr., San Diego, land acquisition, Marine Corps Auxiliary Air Station. $3,281,000. CD 8/27/56.

▲† **Calif., Point Mugu**—TEST CENTER IMPRVS—Yards & Docks Annex, Navy Dpt., Arlington, Va., operational facilities (incl. operational facilities on San Nicolas Island), Naval Air Missile Test Center, $7,669,000, CD 7/23/58.

▲† **Calif., Sacramento**—AIR BASE IMPRVS.—U. S. Eng., 1209 8 St., Sacramento, operational and training facilities, maintenance facilities, troop housing, community facilities, utilities and ground imprvs., and land acquisition, McClellan Air Force Base $4,912,000.

▲† **Calif., Sacramento**—AIR BASE IMPRVS.—U. S. Eng., 1209 8 St., operational and training facilities, maintenance, supply and administrative facilities, troop housing, and land acquisition, Mather Air Force Base. $8,249,000. CD 8/23/56.

▲† **Calif., San Clemente Island**—AIR FIELD IMPRVS.—Eleventh Naval Dist., 1220 Pacific Hy., San Diego, operational and waterfront facilities and utilities, Naval Auxiliary Landing Field. $9,448,000.

▲† **Calif., San Diego**—AIR STATION IMPRVS.—Eleventh Naval Dist., Commandant, 937 Harbor Dr., maintenance facilities and supply facilities, Naval Air Station, North Island. $7,964,000. CD 8/27/56.

▲† **Calif., Victorville**—AIR BASE IMPRVS.—U. S. Eng., 751 S. Figueroa St., Los Angeles, supply and community facilities, George Air Force Base, $2,478,000. CD 8/37/56.

▲† **Fla., Eglin Air Force Base**—AIRPORT IMPRVS.—U. S. Eng., 2301 Grant St., Mobile, Ala., research development, and test facilities, troop housing community facilities, utilities and ground imprvs. and land acquisition Eglin Air Force Base. $5,826,000. CD 8/22/56.

▲† **Fla., Jacksonville**—AIR STATION IMPRVS.—Sixth Naval Dist., U. S. Naval Base, Charleston, S. C., operational facilities and land acquisition, Naval Air Station, Cecil Field, $5,089,000; operational facilities (tactical air navigation facility) Navy Auxiliary Air Station, Saufley Field, $39,000.

▲† **Fla., Panama City**—AIRPORT IMPRVS.—U. S. Eng., 2301 Grant St., Mobile 7, Ala., maintenance facilities, supply facilities, troop housing, community facilities and utilities and ground imprvs., Tyndall Air Force Base. $3,186,000.

▲† **Fla., Pensacola**—NAVAL AIR STATION IMPRVS.—Officer in Charge of Constr., Bldg. 45, U. S. Naval Air Station, Pensacola, operational facilities, waterfront facilities and land acquisition, Naval Air Station, $6,225,000.

▲† **Ga., Albany**—AIRPORT IMPRVS.—U. S. Eng., 200 E. St. Julian St., Savannah, operational and training facilities, maintenance facilities, supply facilities, and land acquisition, Turner Air Force Base, $8,628,000. CD 9/19/55.

▲† **Ga., Macon**—AIRPORT IMPRVS.—U. S. Eng., 200 E. St. Julian St., Savannah, operational and training facilities, maintenance facilities, supply facilities, troop housing, community facilities, utilities and ground imprvs. and land acquisition, Robins Air Force Base. $13,104,000. CD 8/21/56.

▲† **Idaho, Mountain Home**—AIR BASE IMPRVS.—U. S. Eng., City-County Airport, Walla Walla, Wash., maintenance facilities, troop housing, community facilities, and utilities and ground imprvs., Mountain Home Air Force Base, $2,022,000.

▲† **Ind., Peru**—AIR FORCE BASE IMPRVS.—Ninth Naval Dist., Great Lakes Naval Training Station, Great Lakes, Ill., operational, training, maintenance, supply, administrative, and community facilities and land acquisition, Bunker Hill Air Force Base. $8,966,000.

▲† **La., New Iberia**—AIR STATION IMPRVS.—Dist. P. Wks. Office, Eighth Naval Dist., Bldg. 16, U. S. Naval Station, New Orleans, operational facilities and maintenance facilities, Naval Auxiliary Air Station. $3,653,000.

▲† **La., Shreveport**—AIRPORT IMPRVS.—U. S. Eng., 300 Broadway, Little Rock, Ark., operational and training facilities, maintenance facilities, supply facilities troop housing, community facilities, Barksdale Air Force Base. $3,344,000.

▲† **Me., Bangor**—AIRPORT IMPRVS.—U. S. Eng., 150 Causeway St., Boston, Mass., operational and training facilities, maintenance facilities, supply facilities, community facilities, utilities and ground imprvs. and land acquisition, Dow Air Force Base, $14,638,000.

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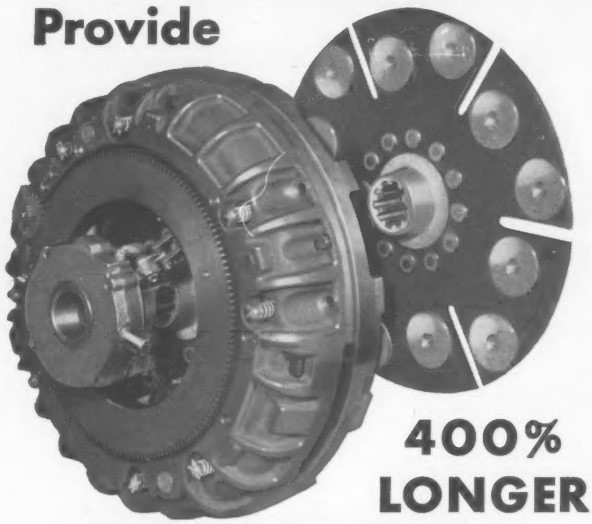

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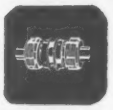
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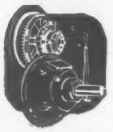
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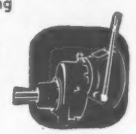
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▲† **Me., Limestone**—AIRPORT IMPRVS.—U. S. Eng., 150 Causeway St., Boston, Mass., operational and training facilities, maintenance facilities, supply facilities, and utilities and ground imprvs., Lorng Air Force Base, **$7,322,000.**

▲† **Md., Patuxent River**—AIR STATION IMPRVS.—P. Wks. Office, U. S. Naval Air Station, Patuxent River, operational facilities, Naval Air Station, **$2,209,000.**

▲†**Mass., Bedford**—AIR FIELD IMPRVS.—U. S. Eng., 150 Causeway St., Boston, operational and training facilities, maintenance facilities, research, development, and test facilities, supply facilities, community facilities, uitlities and ground imprv., and land acquisition, Laurence G. Hanscom Field, **$3,469,000.**

▲† **Mich., Oscoda**—AIRPORT IMPRVS.—U. S. Eng., 600 E. Jefferson St., Detroit, operational and training facilities, maintenance facilities, supply facilities, troop housing and utilities and ground imprvs., Wurtsmith Air Force Base, **$2,153,000.**

▲† **Mich., Selfridge Air Force Base**—AIRPORT IMPRVS.—U. S. Eng., 600 E. Jefferson Ave., Detroit, supply facilities, troop housing, community facilities, and utilities and ground imprvs. **$2,898,000.**

▲† **Minn., Duluth**—AIRPORT IMPRVS.—U. S. Eng., 1217 U. S. Post Office & Custom House, St. Paul, operational and training facilities, supply facilities, troop housing, community facilities, and utilities and ground imprvs., Duluth Municipal Airport, **$4,499,000.**

▲† **Miss., Biloxi**—AIRPORT IMPRVS.—U. S. Eng., 2301 Grant St., Mobile, Ala., operational and training facilities, troop housing and community facilities, Keesler Air Force Base, **$2,209,000.**

▲† **Miss., Columbus**—AIRPORT IMPRVS.—U. S. Eng., 2301 Grant St., Mobile 7, Ala., operational and training facilities, maintenance facilities, supply facilities, administrative facilities and utilities and ground imprvs., Columbus Air Force Base, **$2,320,000.** CD 8/23/56.

▲† **Miss., Greenville**—AIRPORT IMPRVS.—U. S. Eng., 2301 Grant St., Mobile 7, Ala., operational and training facilities, maintenance facilities, supply facilities and land acquisition, Greenville Air Force Base, **$19,389,000.**

▲† **Mont., Glasgow**—AIR BASE IMPRVS.—U. S. Eng., City-County Airport, Walla Walla, Wash., operational and training facilities, supply and administrative facilities, troop housng, family housing, community facilities, and utilities and ground imprvs., Glasgow Air Force Base. **$2,048,000.** CD 8/21/56.

▲† **Mont., Great Falls**—AIR BASE IMPRVS.—U. S. Eng., City-County Airport, Walla Walla, Wash., operational and training facilities, supply facilities, and utilities and ground imprvs., Malstrom Air Force Base. **$3,518,000.**

▲† **Neb., Fort Crook**—AIR BASE IMPRVS.—U. S. Eng., 1709 Jackson St., Omaha, operational and training facilities, maintenance, supply and community facilities, troop housing, utilities and ground imprvs. and land acquisition. Offutt Air Force Base. **$7,681,000.**

▲† **Nev., Fallon**—AIR STATION IMPRVS.—U. S. Eng., 1209 8 St., Sacramento, Calif., operational facilities and land acquisition, Naval Auxiliary Air Station, **$4,199,000.**

▲†**N. H., Portsmouth**—AIR BASE IMPRVS.—U. S. Eng., 857 Commonwealth Ave., Boston, Mass., supply and community facilities, utilities and ground imprvs. and land acquisition, Portsmouth Air Force Base, **$2,344,000.**

▲†**N. M., Albuquerque**—AIRPORT IMPRVS.—U. S. Eng., Box 1538, Albuquerque, supply facilities, troop housing, community facilities, utilities and ground imprvs. Kirtland Air Force Base, **$2,276,000.** CD 8/24/56.

▲† **N. M., Alamogordo**—AIRPORT IMPRVS.—U.S. Eng., Box 1538, Albuquerque, operational and training facilities, research development, and test facilities, troop housing, community facilities and utilities and ground imprvs., Holloman Air Force Base. **$11,869,000.**

▲† **N. M., Roswell**—AIRPORT IMPROVEMENTS—U. S. Eng., P.O. Box 1538, Albuquerque, operational and training facilities, maintenance facilities, supply facilities, administrative facilities, troop housing, community facilities and utilities and ground imprvs., Walker Air Force Base, **$9,676,000.**

▲ **N. Y., Idlewild**—INSTRUMENT RUNWAY, etc.—Port of New York Auth., 111 8th Ave., New York, Zone 11, new Instrument Runway V-prime, parallel to existing Instrument Runway V, New York International Airport. **$12,000,000.**

▲† **N. Y., Rome**—AIRPORT IMPRVS.—U. S. Eng., 111 E. 16 St., New York, Zone 3, operational and training facilities, maintenance facilities, research, development and test facilities, supply facilities, administrative facilities, troop housing, utilities and ground imprvs. and land acquisition, Griffis Air Force Base. **$10,410,000.**

▲† **N. C., Cherry Point**—AIR STATION IMPRVS.—Dist. P. Wks. Office, Fifth Naval Dist., Bldg. N-26, U. S. Naval Base, Norfolk, Va., operational facilities, maintenance, administrative and supply facilities and utilities and ground imprvs., Marine Corps Air Station. **$6,503,000.**

▲† **N. C., Goldsboro**—AIR BASE IMPRVS.—U. S. Eng., 308 Customhouse, Wilmington, operational and training facilities, maintenance supply, administrative and and community facilities, utilities and ground imprvs., land acquisition and real estate imprvs., Seymour Johnson Air Force Base, **$9,991,000.** CD 8/27/56.

▲† **N. D., Grand Forks**—AIR BASE IMPRVS.—U. S. Eng., 1709 Jackson St., Omaha, Neb., operational and training facilities, maintenance, supply, administrative and community facilities, and utilities and ground imprvs., Grand Forks Air Base, **$4,466,000.**

▲† **N. D., Minot**—AIR BASE IMPRVS.—U. S. Eng., 1709 Jackson St., Omaha, Neb., operational and training facilities, maintenance, supply, administrative, hospital and medical facilities, community facilities and utilities and ground imprvs., Minot Air Force Base, **$6,804,000.** CD 8/20/56.

▲† **Okla., Oklahomo City**—AIR BASE IMPRVS.—U. S. Eng., Box 61, Tulsa, Zone 2, operational and training facilities, supply facilities, troop housing and utilities and ground imprvs., Tinker Air Force Base. **$2,674,000.**

▲† **Ore., Portland**—AIRPORT IMPRVS.—U. S. Eng., 4735 E. Marginal Way, Seattle 4, Wash., operational and training facilities, maintenance and supply facilities and utilities and ground imprvs., Portland International Airport. **$3,768,000.** CD 8/20/56.

▲† **Pa., Marietta**—AIR STATION IMPRVS.—U. S. Eng., P. O. Box 1715, Baltimore 3, Md., utilities and ground imprvs. Marietta Air Force Station. **$2,438,000.**

▲† **S. C., Beaufort**—AIR STATION IMPRVS.—P. Wks. Officer, 6th Naval Dist., Naval Base, Dpt. Navy, Charleston, operational facilities, supply facilities and administrative facilities, Marine Corps Auxiliary Air Station. **$2,632,000.** CD 8/28/56.

▲† **S. C., Charleston**—AIR BASE IMPRVS.—U. S. Eng., Custom House, supply facilities, and utilities and ground imprvs., Charleston Air Force Base. **$2,216,000.** CD 5/19/51.

▲† **Tex., Amarillo**—AIR FORCE BASE IMPRVS.—U. S. Eng., Box 61, Tulsa, Okla., operational and training facilities, maintenance supply and community facilities, utilities and ground imprvs., and land acquisition, Amarillo Air Force Base. **$2,872,000.**

▲† **Tex., Big Spring**—AIR FORCE BASE IMPRVS.—U. S. Eng., 100 W. Vickery St., Fort Worth, operational and training facilities, maintenance supply and community facilities, utilities and ground imprvs., Webb Air Force Base. **$4,118,000.**

▲† **Tex., Fort Worth**—AIR BASE IMPRVS.—U. S. Eng., 1100 W. Vickery St., operational and training facilities, supply facilities, troop housing, land acquisition and real estate imprvs., Carswell Air Force Base. **$2,059,000.** CD 10/31/51.

▲† **Tex., Lubbock**—AIR BASE IMPRVS.—U. S. Eng., Box 1538, Albuquerque, N. M., operational and training facilities, supply facilities and land acquisition, Reese Air Force Base. **$5,909,000.** CD 8/21/56.

▲† **Tex., Randolph Air Force Base**—AIR BASE IMPRVS.—U. S. Eng., Box 1229, Galveston, operational and

(Continued on page 88)

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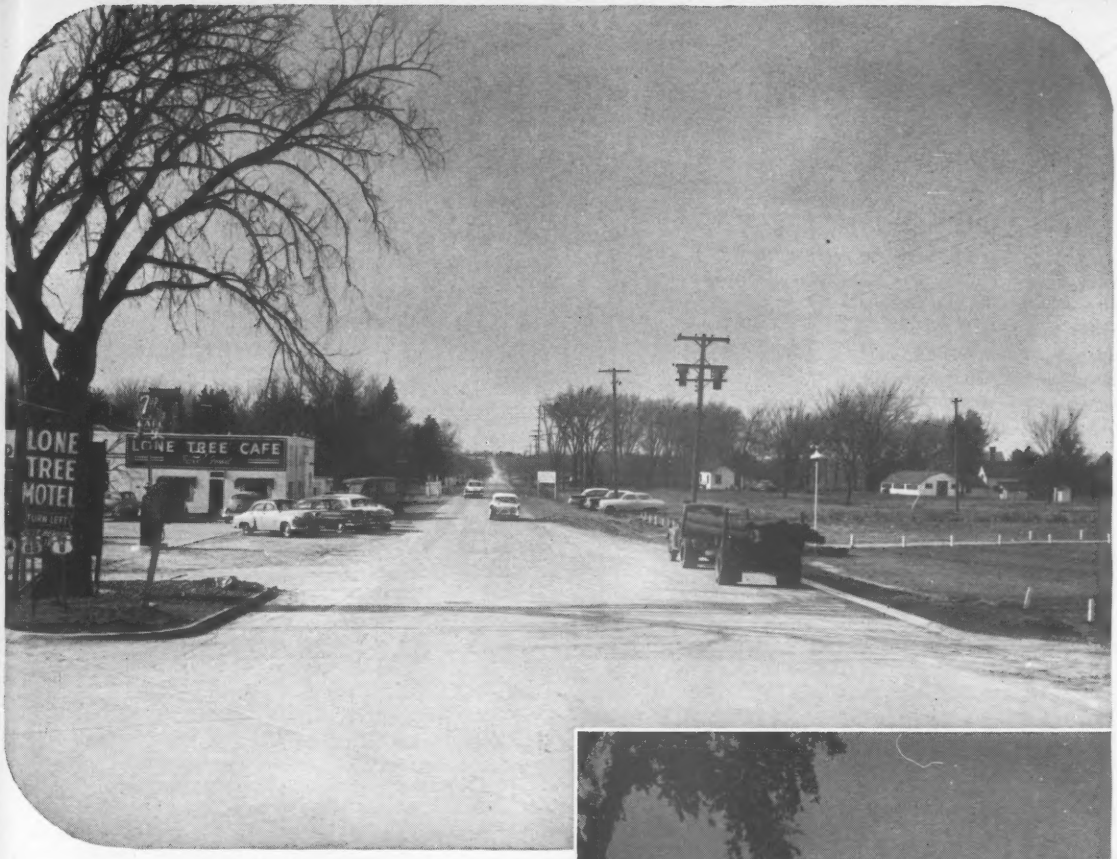

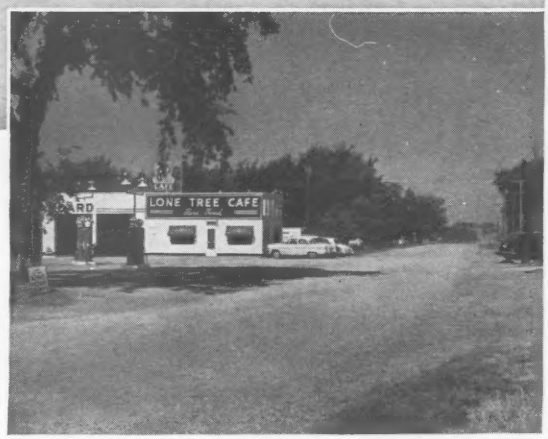

Photos show before and after views of Broadway Road in Polk County

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County officials everywhere are faced with soaring maintenance costs on secondary gravel roads. First, increasing traffic and growing loads are making more frequent repairs necessary. Second, in many areas dwindling supplies of local gravel mean longer hauls and higher material costs.

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Polk and Pocahontas Counties were the next to combat rising maintenance costs with concrete paving. They built six and nine miles respectively in one year. Since these programs got under way a total of twelve Iowa counties have paved more than 120 miles of secondary roads with durable, low-maintenance-cost concrete, using traveling form pavers.

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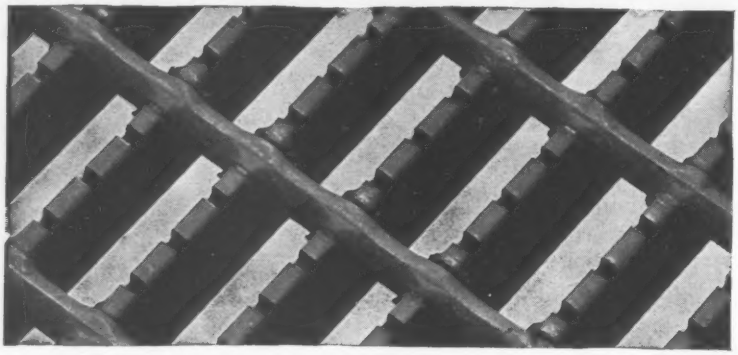

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(Continued from page 86)

training facilities, supply facilities, and utilities and ground imprvs. $2,858,000. CD 5/2/51.

▲† **Tex., Wichita Falls**—AIR BASE IMPRVS.—U. S. Govt., c/o Sheppard Air Force Base, operational and training facilities, maintenance, supply and community facilities, and real estate imprvs., Sheppard Air Force Base. $4,200,000.

▲† **Va., Chincoteague**—NAVAL AIR STATION IMPRVS.—P. Wks. Office, Fifth Naval Dist., U. S. Naval Base, Norfolk, Zone 11, operational facilities and land acquisition, Naval Air Station. $2,818,000.

▲† **Wash., Moses Lake**—AIR FORCE BASE IMPRVS.—U. S. Eng., 4735 E. Marginal Way, Seattle, Zone 4, operational and training, supply and community facilities, Larson Air Force Base. $12,552,000. CD 10/11/55.

▲† **Wash., Whidbey Island**—NAVAL AIR STATION—P. Wks. Officer, Thirteenth Naval Dist., 1611 W. Wheeler St., Seattle, operational facilities and land acquisition, Naval Air Station. $9,365,000.

▲† **Wis., Kansasville**—AIR BASE IMPRVS.—U. S. Eng., 1217 P. O. and Customhouse, St. Paul 1, Minn., operational and training facilities, supply facilities and utilities and ground imprvs., Richard Bong Air Force Base. $7,804,000. CD 8/28/56.

PUBLIC BUILDINGS

▲† **Ala., Fort Rucker**—OPERATIONAL IMPRVS., etc.—U. S. Eng., 2301 Grant St., Mobile, operational facilities and troop housing. $7,549,000. CD 8/30/56.

▲† **Calif., Barstow**—SUPPLY CENTER IMPRVS.—Pub. Wks. Office, 1220 Pacific Hy., San Diego, maintenance facilities administrative facilities and utilities Marine Corps Supply Center. $6,841,000.

▲† **Calif., Fort Ord**—OPERATIONAL FACILITIES, etc.—U. S. Eng., 180 New Montgomery St., San Francisco, operational, and maintenance facilities, and utilities. $3,307,000.

▲ **D. C., Wash.**—SCHOOLS—Bd. Educ., 13 and K Sts. N.W., Kenilworth Elementary School addn. $700,000. Lublin-McGaughy & Assoc., 1300 Connecticut Ave. N.W., consult. engrs., plans by Murphy & Locraft, 1518 "P" St. N.W., elementary school to be known as Florence Hendley School, 6 and Chesapeake Sts. N.W. $857,000, plans by Johnson & Boutin, 1417 22 St. N.W., elementary school, to be known as Drew Elementary School, 56 and Eades Sts. $818,000. CD 9/19/56; elementary school, Mt. Olivet Rd. and Holbrook St. N.E., $1,072,600; Taft Junior High School addn. $465,000; elementary school, 10 and F Sts. N.E., $1,128,000; River Terrace School addn., 34 and Dix Sts. N. E., $625,000; Noyes School addn., 10 and Franklin Sts. N. E., $765,000; warehouse, Queens Chapel Rd. and Adams St. N.E., $1,250,000.

▲† **Ga., Fort Stewart**—HOUSING—U. S. Eng., 200 E. St. Julian St., Savannah, troop housing. $3,691,000.

▲† **Ill., Great Lakes**—NAVAL TRAINING CENTER—Ninth Naval Dist., Great Lakes Naval Training Center, Great Lakes, naval training center, training facilities and troop housing. $5,598,000. CD 4/10/56.

▲† **Kan., Fort Riley**—OPERATIONAL FACILITY, etc.—U. S. Eng., Federal Office Bldg., Kansas City, Mo., operational and maintenance facility and troop housing. $2,525,000.

▲† **Ky., Fort Campbell**—OPERATIONAL FACILITIES, etc.—U. S. Eng., 306 Federal Office Bldg., Nashville, Tenn., operational and maintenance facilities, ground imprvs. and utilities. $5,117,000.

▲† **Ky., Fort Knox**—OPERATIONAL FACILITIES, etc.—U. S. Eng., 830 W. Broadway, Louisville, operational, maintenance and storage facilities and utilities. $4,205,000.

▲† **La., Fort Polk**—CAMP IMPRVS.— U. S. Eng., Box 1229, Galveston, Tex., operational, maintenance facilities, troop housing and utilities. $7,734,000. CD 3/17/53.

▲ **Md., Annapolis**—DORMITORY FOUNDATIONS—Officer in Charge of Constr., U. S. Naval Academy, Annapolis, dormitory foundations, Naval Academy. $1,602,000. CD 11/17/47.

▲† **Mass., Ayer**—OPERATIONAL FACILITIES, etc.—U. S. Eng., 150 Causeway St., Boston, operational facilities, maintenance facilities, administrative facilities, troop housing and utilities, Fort Devons, $6,719,000.

▲ **Mich., Ypsilanti**—SCHOOLS—City, Bd. Educ., Hugh Adams, secy., Ypsilanti, plans by Ralph S. Gerganoff, 206 N. Washington St., two Junior High Schools. $3,000,000. CD 6/10.

▲† **Mo., Fort Leonard Wood**—HOUSING—U. S. Eng., Federal Office Bldg., Kansas City, Mo., troop housing. $4,663,000.

▲ **Neb., Lincoln**—ART GALLERY—University of Nebraska, 12 and R Sts., art gallery. $1,500,000. CD 10/19/50.

▲† **N. H., Hanover**—LABORATORY—U. S. Eng., 857 Commonwealth Ave., Boston, Mass., research and development facility, Cold Regions Laboratory. $2,496,000. CD 3/11/55.

▲ **N. J., Belvidere**—COURT HOUSE—Bd. Freeholders Warren Co., plans by F. H. Wenzelberger, 334 Spring Garden St., Easton Pa., court house, reconstruction, and addn. $1,000,000. CD 3/20.

▲ **N. J., Jersey City**—APARTMENTS—Jersey City Housing Auth., City Hall, plans by Benjamin H. Whinston, 780 Third Ave., New York 17, N. Y., three 21 story

(Continued on page 90)

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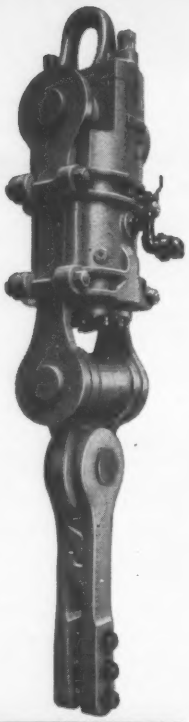

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U.S.A. CANADA

(Continued from page 88)

apartments for 1,500 families Gregory Gardens on 13 acre tract, on Gregory St. $17,000,000. CD 4/5.

▲ **N. J., Saddle Brook**—SCHOOL—Bd. Educ., Twp. Saddle Brook, Cambridge Ave., plans by Ira Davey, 8 Depot Sq., Englewood, elementary school in northern end of twp. $1,000,000; high school addn., $350,000.

▲ **N. Y., Brooklyn**—SCHOOL—Bd. Educ., 42-12 Crescent St., Long Island City, plans by Michael Radoslovich, c/o owner, Proj. E 761, P. S. 286, vicinity of Ave. "A" and E. 26 St. $2,650,000. CD 3/2/55.

▲ **N. Y., Brooklyn**—SCHOOL—Bd. Educ., 45-12 Crescent St., Long Island City, plans by Michael Radoslovich, c/o owner, Proj. E-759, P. S. 279, Canarsie Area. $2,300,000. CD 5/20.

▲ **N. Y., Brooklyn**—CLASSROOM, etc.—Bd. Higher Educ., 45-12 Crescent St., Long Island City, plans by Chapman, Evans & Delehanty, 50 Broadway, New York, Zone 4, Proj. HN-120, new classroom and staff room bldg., Brooklyn College. $1,786,000.

▲† **N. Y., Brooklyn**—ARMY BASE—U. S. Eng., 111 E. 16 St., New York, Zone 3, army base, operational facilities, Transportation Corp. $1,169,000.

▲ **N. Y., New York**—WORKHOUSE—Dpt. P. Wks., Municipal Bldg., Zone 7, plans by Brown & Guenther, 1860 Broadway, New York, Zone 23, Proj. C-76, workhouse institution, on Harts Island. $7,000,000. CD 5/23.

▲† **N. Y., West Point**—ACADEMY UTILITIES—U. S. Eng., 111 E. 16 St., New York, Zone 3, United States Military Academy utilities. $1,666,000. CD 10/10/46.

▲ **N. Y., Williamsville**—SCHOOL—Williamsville Bd. Educ., 5950 Main St., voted bonds Sept. 7, Junior High School with swimming pool. $2,776,000. Duane Lyman & Assoc., 505 Delaware Ave., Buffalo, archts. CD 3/28.

▲† **N. C., Fort Bragg**—OPERATIONAL FACILITIES, etc.—U. S. Eng., Wilmington, operational and maintenance facilities. $1,051,000.

▲ **N. C., Lenoir**—SCHOOLS—Caldwell Co. Bd. Educ., Lenoir, plans by Coffey & Olson, Lenoir, schools, $2,000,000. CD 11/29/55.

▲ **O., Cincinnati**—SCHOOL—Bd. Educ., 608 E. McMillan St., plans by Kruckemeyer & Strong, Carew Tower, 1 and 2 story, brick, Vine St. Elementary School. $1,000,000. CD 11/15/51.

▲ **O., Cleveland**—SCHOOLS—Bd. Educ., 1380 E. 6th St., Zone 14, mill levy to be voted on at election Nov. 5, school building program for next 3 years. $9,468,000. Arthur Baer, c/o owner, archt. CD 10/22.

▲ **O., Cleveland Heights**—SCHOOL—Cleveland Heights Bd. Educ., 1749 Lee Rd., Cleveland, Zone 18, 2.75 mill levy to be voted on at election Nov. 5, to provide $600,000 per year for 4 years, high school addn. $2,400,000. Spahn & Barnes, 1950 Lee Rd., Cleveland, Zone 18, archts. CD 5/29.

▲ **Tex., Amarillo**—SCHOOLS—Amarillo Independent School Dist., Amarillo, plans by Harold Walsh, Paramount Bldg. Junior High School. $1,400,000. CD 7/18.

▲† **Tex., Fort Bliss**—OPERATIONAL FACILITIES, etc.—U. S. Dist. Eng., Box 1538, Albuquerque, N. M., operational, training, maintenance, storage, medical, administrative facilities, troop housing, community facilities and utilites. $7,704,000.

▲† **Va., Fort Belvoir**—OPERATIONAL FACILITIES, etc.—U. S. Eng., First and Douglas Sts., N.W., Wash. 25, D. C., operational facilities, training facility and maintenance facility. $1,654,000. CD 10/4/51.

▲† **Va., Fort Lee**—TROOP HOUSING, etc.—U. S. Eng., foot of Front St., Norfolk, Zone 1, troop housing and utilities, operational, storage and hospital facilities. $5,417,000.

▲† **Va., Norfolk**—PUBLIC WORKS CENTER—Dist. P. Wks. Office, Fifth Naval Dist., U. S. Naval Base, Zone 11, utilities, Public Works Center, $3,244,000.

▲† **Va., Quantico**—MARINE CORPS SCHOOL IMPRVS.—P. Wks. Office, Potomac River Naval Command, Naval Gun Factory, Wash., D. C., supply facilities, troop housing, and utilities, Marine Corps School. $1,923,000.

▲ **Wash., Bellevue**—SCHOOL—School Bd., Lake Hills Elementary School, $542,542; high school, $1,722,843. Bids likely next year.

▲† **Wash., Fort Lewis**—OPERATIONAL FACILITIES, etc.—U. S. Eng., 4735 E. Marginal Way, Seattle, operational, maintenance, administrative and community facilities and utilities. $1,487,000.

▲ **Wash., Seattle** — SCHOOL — Shoreline School Dist., E. 158 St. and 20 Ave. N.E., Brookside Elementary School, $526,437; Central Junior High School, $1,220,693. Bids likely next year.

▲† **Wash., Spokane** — TRAINING FACILITIES, etc. — U. S. Eng., 4735 E. Marginal Way, Seattle, Zone 4, operational and training facilities, Fairchild Air Force Base. $1,480,000.

▲ **Wis., Madison**—SCIENCE, etc.—University of Wisconsin, Bd. Regents, science bldg., $2,095,750; fine arts bldg., $1,058,000; heating station, $351,000.

COMMERCIAL BUILDINGS

▲ **Colo., Denver**—TOWERS APARTMENT—Group, c/o Dr. John N. Perryman, 3300 E. Hampden Ave., Denver, Colo., plans by Langdon Morris, engr.-archt., 263 Josephine St., Towers Apartment bldgs., incl. one 20 story building to house apartments, shops, etc., nine 11 story buildings and six 2 story buildings, incl. swimming pools, park areas and auto parking space. $20,000,000. E. K. Hartzell & Assoc., 263 Josephine St., consult. engrs.

(Continued on page 92)

ALLISON salutes GALION's 50 Years of Progress

The Allison Division of General Motors proudly congratulates The Galion Iron Works on a half-century devoted to the design and manufacture of better road-building tools

YESTERDAY—This early Galion "steamroller" was a road-building miracle in its day. Key to its efficiency was the smooth, quick reversing possible with steam power. From this model Galion went on to more modern motor rollers.

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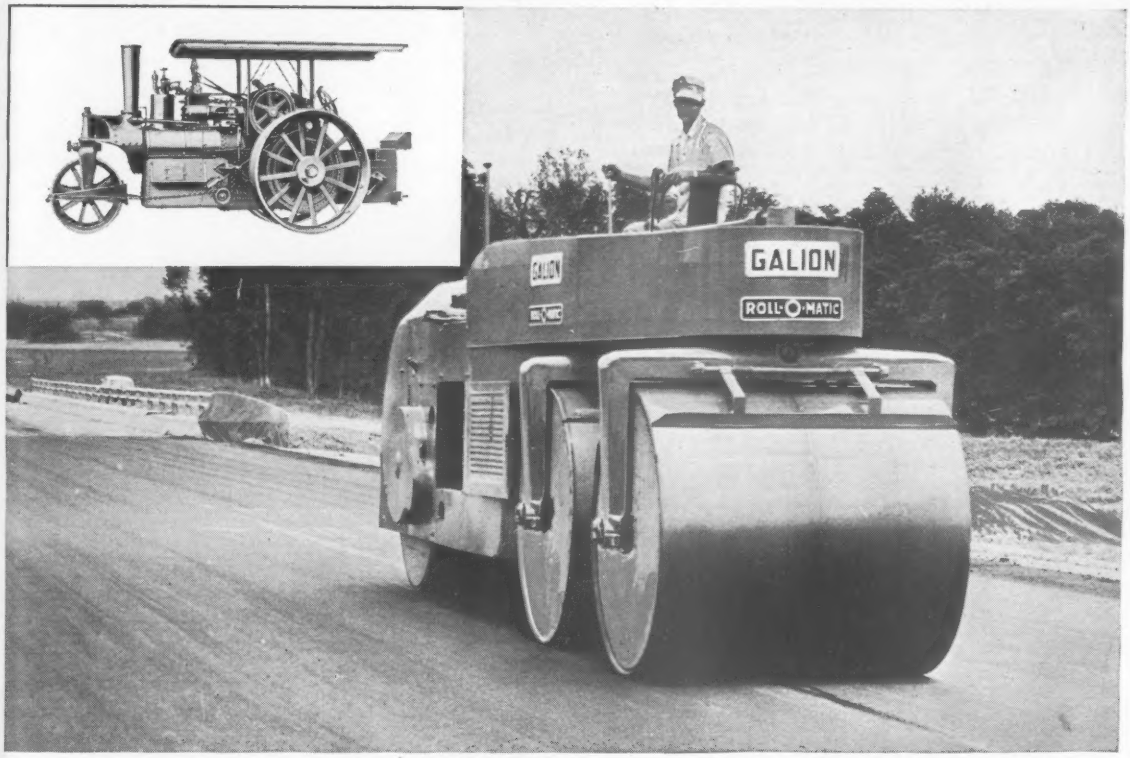

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TORQMATIC DRIVES

(Continued from page 90)

▲ **Conn., Southington**—HOUSES—Meadowood Corp., Pinecrest Dr., 103 houses, second section of "Meadowood," South End Road. $1,545,000. Alan B. Crowell, c/o owner, engr.

▲ **Fla., Fort Lauderdale**—APARTMENT—Mr. H. D. Remington, c/o Charles F. McKirahan, archt., 2400 E. Oakland Park Blvd., 16 story, 58x150 ft., CB-S & RCI., concrete pile, apartment, swimming pool, 3003 Terramar St. $1,000,000.

▲ **Kan., Mission Woods**—HOTEL, etc.—Beck Cross Hotel Co., 5920 Nall Ave., Mission, plans by Neville, Sharp & Simon, 12 and Walnut St. Bldg., Kansas City, Mo., 3 story, 300-unit hotel with swimming pool, dining facilities, service shops, $3,000,000; 40,000 sq. ft. office, $650,000; 35-unit garden-type apartment, $560,000, all at Johnson Drive and State Line, Hare & Hare & Hare, 114 W. 10 St., Kansas City, Mo., landscape archts.

▲ **Ky., Louisville**—DEPARTMENT STORE—Louisville Realty Co., 1414 Bardstown Rd., plans by Abbott Merkt & Co., archts., 10 E. 40 St., New York, N. Y., and E. T. Hutchings, assoc. archt., Heyburn Bldg., Zone 1, 5 story, 112x113 ft. addn. to Stewart Dry Goods Store (lessee). $1,000,000. Bids on general contract in about 30 days.

▲ **Md., Baltimore**—HOSPITAL—Mercy Hospital, Calvert St., plans by Helge Westermann, 113 W. 57th St., New York 19, N. Y., new bldg to replace present hospital. Taylor & Fisher, 130 W. Hamilton St $1,000,000.

▲ **Mo., Frontenac (St. Louis 24, P.O.)**—HOSPITAL—Shriners Hospital for Crippled Children, 700 S. Kingshighway, St. Louis, Zone 10, plans by Sverdrup & Parcel, Inc., consult. engr.-archt., 917 Olive St., St. Louis, Zone 1, 100-bed, 1 story, brick, rein.-con., steel hospital on 10-acre site west side of Lindbergh Blvd., south of Clayton Rd. $2,000,000. CD 3/29/56.

▲ **Mo., Pevely**—CONVALESCENT CAMP—Local No. 688 of Teamster Union, Harold J. Gibbons, secy.-treas., 1641 S. Kingshighway, St. Louis, Zone 10, convalescent and health camp, incl. some housing quarters, swimming and wading pools, playgrounds, dining hall, etc. $2,250,000.

▲ **N. J., Erlton**—HOSPITAL—Cherry Hill Hospital, c/o 725 Collings Ave., West Collingswood, hospital, Cooper Landing Rd. $1,000,000. Engineering Consultants, 843 N. 19th St., Phila. Pa., consult. engrs.-archts.

▲ **N. J., Linwood**—OFFICE, etc.—Prudential Life Insurance Co. of America, 763 Broad St., Newark, plans by Frank Grad, 1180 Raymond Ave., Newark, 80,000 sq. ft. on 31 acre site office bldg. and parking lot. $1,500,000. CD 8/3.

▲ **N. J., Yardville**—RESIDENTIAL DEVELOPMENT—John F. Smith Co., 9th and Luzerne Sts., Phila., Pa. (120) residential development, West Windsor Twp., Pennyle Hightstown Rd., etc. $2,000,000.

▲ **N. Y., New York**—SCHOOL, etc.—Archdioceasan Bldg. Comn., 451 Madison Ave., Zone 22, plans by Eggers & Higgins, 100 E. 42 St., Zone 17, 2 story school and convent, Pelham Parkway South, southeast corner of Easchester Rd., for Sisters of Sacred Heart of Mary, Marymount College. $1,500,000.

▲ **N. Y., New York**—APARTMENT—Chalet Ski Club, Inc., 220 E. 42 St., plans by Alexander McIlvaine, 128 E. 36 St., Zone 16, 11 story apartment, 310-14 E. 49 St. $1,000,000.

▲ **N. Y., New York**—COMMERCIAL—I. Jerome Riker, 562 Fifth Ave., Zone 19, 8 story commercial bldg., on block bounded by Canal, Walker, Center and Baxter Sts. $1,500,000.

▲ **N. C., Charlotte**—HOSPITAL—Charlotte Memorial Hospital, 1400 Scott Ave., plans by A. G. O'dell & Assoc., 109 W. 3 St., hospital addns. $4,000,000. CD 5/8.

▲ **Pa., Wayne**—HOTEL—Radnor Shopping Center, 1030 Lancaster Ave., Rosemont, plans by C. Frederick Wise, c/o owner, 200 room hotel. $2,000,000.

▲ **Tex., Fort Worth**—BANK, etc.—First National Bank, c/o K. Lee Johnson, Jr., pres., 711 Houston St., plans by Skidmore, Owings & Merrill, 425 Park Ave., New York, N. Y., and Preston M. Geren, 1607 Fort Worth National Bldg., Fort Worth, bank and office bldg. with underground parking garage, W. 7th, W. 6 and Lamar Sts. $2,000,000. CD 8/1/51.

▲ **Tex., Houston**—HOSPITAL—Houston Negro Hospital, 2900 Elgin St., hospital unit. $1,000,000.

▲ **Tex., Houston**—HOTEL—The Rice Hotel, Main and Texas Sts., plans by J. Russ Baty, Bankers Mtg. Bldg., 5 story hotel addn, swimming pool. $3,000,000. Rob. S. Cummins, 5226 Bellaire Blvd. and Dale S. Cooper & Assoc., 3815 Garrott St., consult. engrs. Bids in 90 days. CD 9/11.

▲ **Wash., Seattle**—MOTEL—University Enterprises, 4728 University Way, Zone 5, plans by D. W. Vicary, 2397 Rainier Ave., 4 story, rein.-con., masonry, 100 unit motel, 2201 7 Ave. $1,000,000.

▲ **Ont., Toronto**—RESIDENTIAL DEVELOPMENT—Don River Heights Ltd., c/o Town Planning Consultants Ltd., planning consultants, 614 Church St., 300-unit residential development, south side of Finch Ave. $4,500,000.

▲ **Ont., Toronto**—RESIDENTIAL DEVELOPMENT—S. Geller, c/o Town Planning Consultants, Ltd., planning consultants, 614 Church St., 180-unit, single dwellings, frontage on Markham Rd., east side. $2,500,000.

▲ **Ont., Toronto**—RESIDENTIAL DEVELOPMENT, etc.—Robert McClintock Ltd., 641 Victoria Park Ave., plans by Dr. F. G. Faludi, planner, 614 Church St., 333-unit dwellings, O'Connor Hills subdivision, residential and industrial development. Over $3,000,000. Proctor & Redfern, 11 Jordan St., consult. engrs.

INDUSTRIAL BUILDINGS

▲ **N. J. Burlington**—PLANT—Phoenix Iron & Steel Co., Phoenixville, Pa. and 25 Broad St., New York, N. Y., steel plant and railroad siding. $75,000,000. Plans for first multi-million dollar phase nearly completed, bids soon, A. J. Boynton, 111 N. Wabash Ave., Chicago, Ill., engr.

▲ **Tex., Eldorado** (at Hulldale)—DEHYDRATION UNITS, etc.—Sinclair Oil & Gas Co., and Skelly Oil Co., Houston Club Bldg., Houston, dehydration and desulfurization units. $2,000,000.

UNCLASSIFIED

▲† **Calif., Long Beach**—NAVAL SHIPYARD IMPRVS.—Eleventh Naval Dist., 1220 Pacific Hy., San Diego, facilities for remedying effects of ground subsidies, Naval Shipyard. $1,500,000. CD 8/27/56.

▲† **Conn., New London**—SUBMARINE BASE FACILITIES—Dist. P. Wks. Office, Third Naval Dist., 90 Church St., New York, N. Y., waterfront facilities, Naval Submarine Base. $2,966,000.

▲† **Me., Jonesport**—RADIO STATION—First Naval Dist., 495 Summer St., Boston, Mass., operational facilities, and utilities, Naval Radio Station, Washington Co. $13,982,000. Hayden, Harding & Buchanan, 1340 Soldiers Field Rd., Brighton, Mass., consult. engrs.

▲ **New Jersey**—PARK—Bd. Freeholders Bergen Co., and Bergen Co. Park Comn., Administration Bldg., Hackensack, park in Bergen Co. Meadows, $20,000,000, C. Carl Stelling Assocs., 26 E. 36 St., New York, N. Y., consult. engrs.-archts.

▲† **N. Y., Brooklyn**—SHIPYARD IMPRVS.—Dist. P. Wks. Office, Third Naval Dist., Federal Office Bldg. 90 Church St., New York, Zone 7, utilities, $1,452,000; utilities, $332,000, Naval Shipyard.

▲† **N. C., Camp Lejeune**—MARINE CORPS BASE IMPRVS.—P. Wks. Officer, Fifth Naval Dist., U. S. Naval Base, Norfolk 11, Va., operational and training facilities and utilities, Marine Corps Base, $2,372,000.

▲† **R. I., Newport**—NAVAL STATION IMPRVS.—First Naval Dist., 150 Causeway St., Boston 14, Mass., troop housing and utilities, Naval Station. $2,729,000.

▲† **Tex., Fort Hood**—OPERATIONAL FACILITIES, etc.—U. S. Dist. Eng., Box 1600, Fort Worth, operational, training, administrative, maintenance, community facilities and utilities. $2,362,000. CD 8/21/56.

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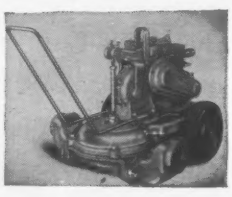

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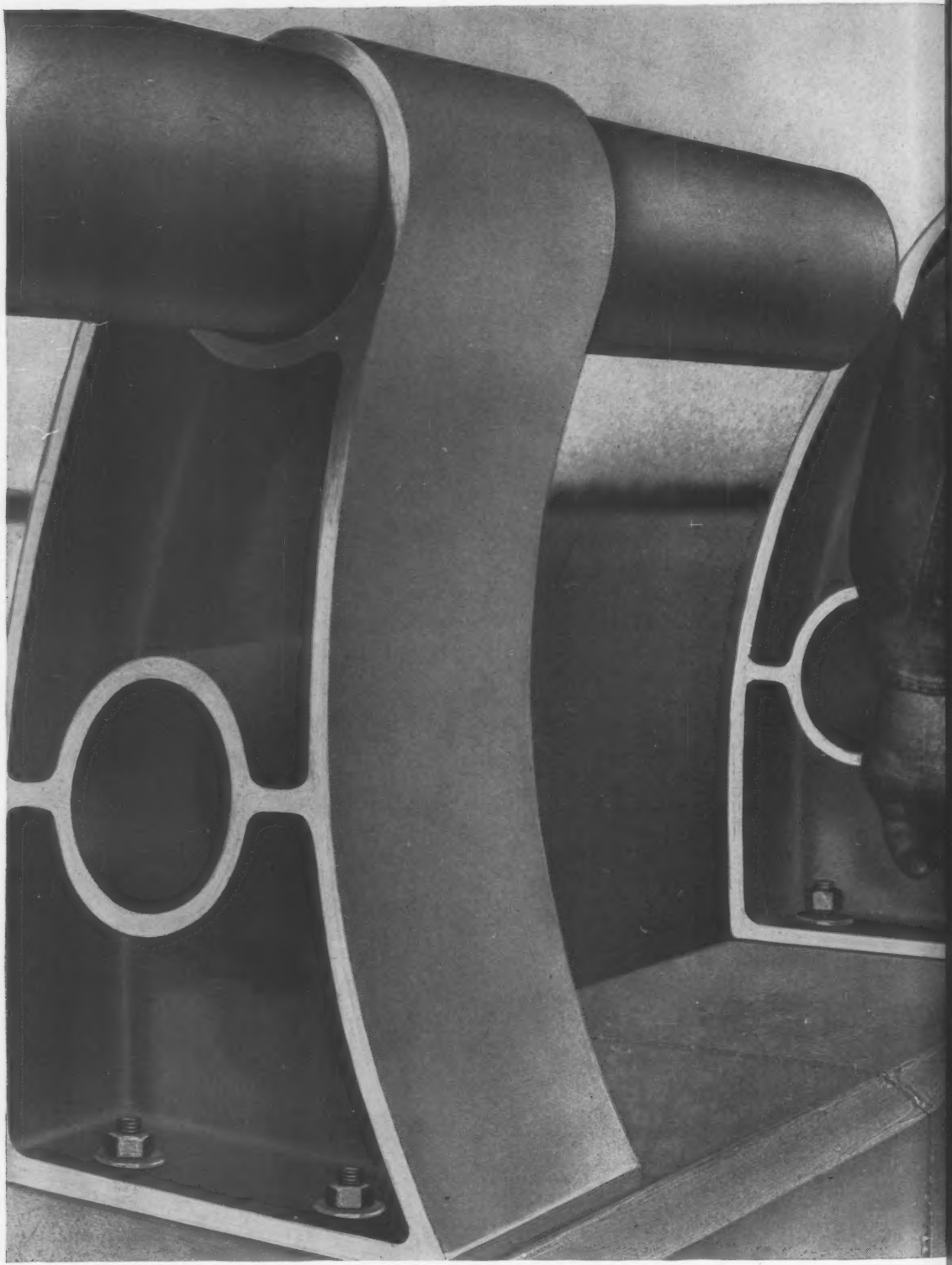

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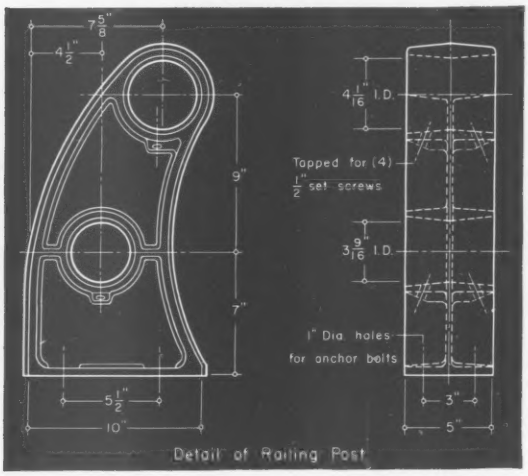
When your construction schedule is tight, you can depend on Flynn deliveries. And you can be sure that long metallurgical experience at Flynn will provide alloys and cross-sections of maximum strength with minimum weight.

Investigate the wealth of post-and-railing combinations available to you *at low cost* through Flynn's system of standard designs. Then, when you need a complete package (railing, rail seats, posts, anchor bolts, either standard or custom)—*ask Flynn first.*



The post used on the new Hampton Roads (Norfolk, Va.) Bridge is one of Flynn's many standard designs. This and other standard Flynn components are available to you for low-cost yet distinctive modern construction.

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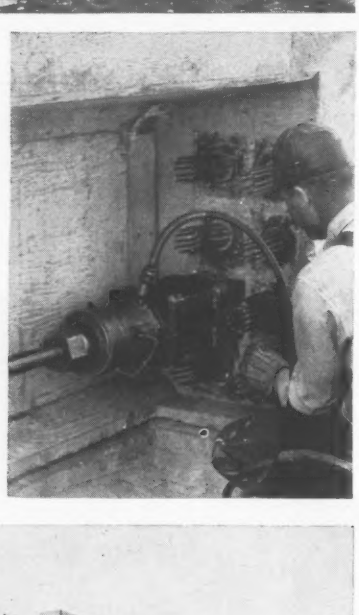
FLYNN
EXTRUSIONS

PRESTRESSED GIRDER, hoisted by hydraulic jacks, nears top of columns. 132 lb. steel rail, inserted through holes at sides of the columns, supported girders until they were connected to the columns.



A TOTAL FORCE of 1,570,000 pounds was applied to each joint through 8 cables installed between columns and end blocks of girders. Cables consisted of twelve ¼" high-tensile steel wires encased in a 1½" steel sheath. Faces of columns and girders were carefully grouted for uniform bearing.

SMOOTH CEILING inside gymnasium of Parkview High School, Springfield, Missouri, results from resting precast channel roof-slabs on lower flanges of girders. Richard P. Stahl, Springfield, Missouri, architect. Prestressed girders and columns by Prestressing Research & Development, Inc., San Antonio, Texas. J. E. Pyle Construction Company, of Little Rock, Ark., contractor.

Concrete roof frame 146 feet wide and rigidly tied

EIGHT CONTINUITY CABLES, stressed to a total force of 1,570,000 pounds at each joint, tie 146′ prestressed concrete girders and unusual twin columns into a rigid frame for the combination auditorium-gymnasium of the Parkview High School, Springfield, Missouri.

Precast and stressed on the concrete floor of the gymnasium, directly below their final position, the seven 104-ton girders were lifted to the tops of the 30′ columns by the same hydraulic jacks used for prestressing. After placement of precast concrete roof-deck slabs, continuity cables at the joint between girders and columns were installed and stressed.

Concrete, including 5,000 psi mix for the girders, was placed at an average of 1,000 cu. yds. a month, delivered on schedule, properly processed in truck mixers of certified design, capacity, mixing speed and water control accuracy.

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Plainfield, N. J.

Bids—Low Bids—Contracts—Second Section

NEW ENGLAND

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

BRIDGES

October 7 Connecticut October 8 Massachusetts

STREETS AND ROADS

October 7 Connecticut October 15 Massachusetts

BUILDINGS—BA

▲ **Vt., Burlington**—MEDICAL—BA 10/17—University of Vermont and State Agricultural College, Burlington, medical bldg. $7,000,000-$8,000,000. Plans deposit $50. Skidmore, Owings & Merrill, 575 Madison Ave., New York, N. Y., and Freeman, French & Freeman, 158 Bank St., Burlington, Vt., archts. CD 4/19/56.

BUILDINGS—LB & CA

▲ **Aberthaw Constr. Co.**, 60 State St., Boston, Mass., CA $1,750,000, PLANT addn. of Research Laboratory and Executive OFFICE BLDG., off Hartwell Rd., BEDFORD, MASS. Raytheon Mfg. Co., Foundry Ave., Waltham, Mass.

▲ **M. S. Kelliher Co.**, 294 Washington St., Boston, Mass., CA $2,048,960, ADMISSION and TREATMENT BLDG., State Hospital, FOXBORO, MASS. Commonwealth of Mass., Dpt. Mental Health, c/o Div. Bldg., Constr., 38 Chauncy St., Boston. Mass. Bids Sept. 6. CD 9/10, under LB.

▲ **Schnier & Shlomberg**, 18 Raymond Rd, West Hartford, Conn., CA $2,865,650, 185 HOUSES, Silver Estates, EAST HARTFORD, CONN. Silver Estates, Inc., 18 Raymond Rd, West Hartford, Conn. awarded Sept. 20. CD 1/9.

MIDDLE ATLANTIC

HEAVY CONSTRUCTION—BA

▲ **New York**—BA 10/22—The Power Auth. of State of New York, The Coliseum Tower, 10 Columbus Circle, New York, Zone 19, Niagara Contr. NP 5, Spec. PA-N-25003, furnishing, del. 180,000 kva three-phase power transformers for Lewiston Power Plant, Niagara Power Proj. Plans deposit $10. Uhl, Hall & Rich, 230 Congress St., Boston 14, Mass., engrs. CD 8/15.

BUILDINGS—BA

▲‡ **Md., Baltimore**—SOCIAL SECURITY HEADQUARTERS, etc.—BA 10/17—General Services Admin., 19 and F Sts. N. W., Wash. 25, D. C., one 10 story, 50 x 300 ft. Social Security Headquarters, 5 story, 425 x 625 ft. Accounting Bldg., brick, limestone, concrete, steel air conditioned, terrazzo, asphalt tile, Woodlawn. $24,000,000. Plans deposit $150. Whitman-Requardt & Assoc., 1304 St. Paul St., Zone 2, mech. engrs. Buckler, Fenhagan, Meyer & Ayers, and Fisher, Federal Land Bank Bldg., Zone 18, and Nes Campbell & Assoc., 1020 St. Paul St., Zone 2, archts. CD 9/3.

▲ **Md., Rockville**—SCHOOL—BA 10/24—Montgomery Co. Bd. Educ., Sligo Jr. High School, Silver Spring. $1,800,000. Plans deposit $75. Johannes & Murray, 855 Pershing Dr., Silver Spring, Md., archts. CD 5/15.

HEAVY CONSTRUCTION—LB & CA

▲ **NEW YORK**—State Dpt. P. Wks., Gov. Alfred E. Smith State Office Bldg., Albany, Bids opened 9/19,

N. Y.—**L. G. DeFelice & Son, Inc.**, Nettleton Ave., North Haven, Conn., LB $9,176,027, est. $11,390,000 (13 bidders) 7 overpasses for 6-lane access road "Northway", Interstate Route 502, Albany to Latham, Albany Co.;

N. Y.—**Raymond & Louis Contg. Co.**, Syracuse, N. Y., LB $233,095, est. $265,000 (6 bidders) Webb Hollow Rd. Underpass 0.06 mi. Interstate Route 505, Onondaga Co.;

N. Y.—**Schwab Bros. Trucking**, Tonawanda, N. Y., LB $113,665, est. $133,000 (4 bidders) viaduct (Fox St.-Ridge Rd.) demolition 0.34 mi. Contr. No. 2, City of Lackawanna, Arterial, Route, Fuhrmann Blvd.-Hamburg Turnpike, Erie Co. CD 8/22.

▲ **NEW YORK**—State Dpt. P. Wks., Gov. Alfred E. Smith State Office Bldg., Albany, Bids opened 9/19,

N. Y.—**Bero Constr. Corp.**, Waterloo, N. Y., LB $737,122, est. $860,000 (5 bidders) 4.42 mi. Route 11, County Line-Gouverneur, S.H. 5287, St. Lawrence Co.; LB $246,646, est. $268,000 (2 bidders) 0.64 mi. Route 104A, Red Creek-Fair Haven, S.H. 1185, Wayne Co.; LB $3,362,624, est. $3,979,000 (8 bidders) 1.02 mi., 2.16 acc. mi., Interstate Route 505, City of Syracuse, Oswego Blvd., Syracuse-Mattydale S.H. 54-3, Phoenix-Syracuse, S.H. 5274, Onondaga Co.;

N. Y.—**Holmes & Knudsen, Inc.**, 1414 Palisades Ave., West Englewood, N. J., LB $410,974, est. $414,000 (only bidder) 1.54 mi. S.H. 1844, New Jersey State Line-Ramapo, Route 17, Rockland Co.;

N. Y.—**John Arborio, Inc.**, N. Cedar St., Poughkeepsie, N. Y., LB $2,290,177, est. $2,794,000 (7 bidders) 5.19 (4.24 acc.) mi. Palisades Interstate Parkway Sect. 2 (Rte. 3030-Rte. 49A), Rockland Co.;

N. Y.—**Lizza & Sons, Inc.**, 21 Orchard St., Oyster Bay, N. Y., LB $436,786, est. $526,000 (5 bidders) 1.77 mi. Route 106, Jericho-Oyster Bay, S.H. 9021, Nassau Co.;

N. Y.—**Rapone Contg. Corp.**, 399 Duffy Ave., Hicksville, N. Y., LB $1,271,293, est. $1,496,000 (7 bidders) 2.46 mi. Route 110, Huntington-Amityville, Part 1, S.H. 794, Suffolk Co.;

N. Y.—**John M. Robertson, Inc.**, Oneonta, N. Y., LB $626,750, est. $670,000 (4 bidders) 3.53 mi. Route 7 Wells Bridge-Otego, S.H. 5153, Otsega Co.;

N. Y.—**C. P. Ward, Inc.**, 700 Hollenbeck St., Rochester 21, N. Y., LB $295,625, est. $297,000 (only bidder) 0.38 mi. (0.16 acc.) miles, Rochester City-Mt. Read Blvd. (Buffalo Road to Maple St.), Monroe Co.;

N. Y.—**Green Island Constr. Co.**, 594 Broadway, Watervliet, N. Y., LB $149,785, est. $190,000 (7 bidders) 4.47 mi. Route 38, Freeville-Groton, S.H. 926, Tompkins Co.;

N. Y.—cancelled bids to have been opened Sept. 19, 1.6 mi. Montaur Falls-Townsend, (C.R. 398) FASS. 57-12, Schuyler Co., est. $293,000. CD 8/22.

▲ **Cayuga Foundation Corp.**, 30 Vesey St., New York 7, N. Y., CA $9,145,061 part of Rapid Transit Railroad, Section 2, of Route 112, Manhattan Boro, Contr. C-124, NEW YORK, N. Y. New York City Transit Auth., 370 Jay St., Brooklyn 1, N. Y. Bids Aug. 30. CD 9/6, under LB.

▲ **J. E. Tillman**, 702 N. Focust St., Centralia, Ill., CA $1,633,815, 25 m.g. low service reservoir in Brentwood Park vicinity, New York Ave. and 9 St. N.E., WASH., D. C. Dpt. Sanitary Eng., 499 Pa. Ave. N.W., Wash., D. C. Bids Sept. 12. CD 9/17, under LB.

BUILDINGS—LB & CA

▲ **Caristo Constr. Corp.**, 26 Court St., Brooklyn 2, N. Y. CA $1,545,000. PUBLIC SCHOOL No. 270, DeKalb and Classon Ave., BROOKLYN, N. Y. Bureau Constr. Bd. Educ., 42-15 Crescent St., Long Island City 1, N. Y. Bids Sept. 5. CD 9/12, under LB.

▲ **Valmont Homes**, c/o Strathomore Agency, 665 E. Jericho Turnpike, Huntington Station, N. Y., Owner Builds. $2,400,000. 160 HOMES, Jericho Turnpike ¼ mi. east of Larkfield Rd., HUNTINGTON, N. Y.

▲ **Caristo Constr. Corp.**, 26 Court St., Brooklyn 2, N. Y., CA $3,228,000 HHFA Proj. NY-30-CH-35, STUDENT CENTER BLDG., Washington Sq., NEW YORK, N. Y. New York University, Washington Sq., New York, N. Y. Bids Aug. 27. CD 8/30, under LB.

▲ **Chain Systems, Inc.**, 11 E. 52 St., New York 22, N. Y. Separate Contracts. $2,000,000. 15 story OFFICE, 20 E. 46 St., NEW YORK, N. Y. Henry G. Greene, 855 6 Ave., New York, N. Y., archt.

▲ **Wheel Constr. Co.**, Box 545, Fairlawn, N. J., CA Est. $1,000,000, 57 addnl. HOUSES, Edgar Rd. and Route 34, MADISON TWP., (MATAWAN P.O.) N. J. E. B. Leone, Box 545, Fairlawn, N. J.

▲ **Dean Constr. Co.**, 29-38 41 Ave., Long Island City, N. Y., CA $1,217,480, general contract HIGH SCHOOL, off Garetson Rd., Bridgewater, SOMERVILLE, N. J. Bd. Educ. Bridgewater Twp., Somerville, N. J. Bids Sept. 12, CD 9/19.

▲ **Hess Trading & Transport, Inc.**, State St., Perth Amboy, N. J., erecting of REFINERY for fuel oil to be located on Arthur Kill, WOODBRIDGE, N. J. (Correction—contract not awarded). CD 9/20, under CA.

SOUTH

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

BRIDGES

October 11 Alabama

STREETS AND ROADS

October 11 Alabama

BUILDINGS—BA

▲ **Ky., Lexington**—MEDICAL SCIENCE—BA 11/5—Commonwealth of Ky., Div. Purchases, Frankfort, 6 story, brick, stone, rein.-con. Medical Science Bldg., University of Kentucky, $5,200,000. Plans deposit $100. Meriwether Marye & Assocs., 248 E. Short St., archts. Proctor-Ingles, 915 S. Limestone St., engrs. Ellebe & Co., 1st Natl. Bank bldg., St. Paul, Minn., consult. archts. CD 9/18.

HEAVY CONSTRUCTION—LB & CA

▲ **FLORIDA**—State Rd. Dpt., Tallahassee, Bids opened 9/19,

Powell Bros., Inc. & Heavy Constructors, Inc., Box 281, Fort Lauderdale, Fla. LB $3,543,994 three 6-lane bridges totaling 3,648 ft. in length, incl. pedestal piers on 20-in. prestressed concrete piles; channel piers constr. in cofferdams and founded on steel H-piles; 20-in. concrete pile bents, concrete deck on precast-prestressed concrete beams; 130 ft. channel span on steel plate girders rein.-con. flat slab spans, alt. aluminum handrail, timber fenders, navigation and roadway lighting, SR 25, across Biscayne Bay between Miami and Miami Beach (extensions of N. E. 36 St. in Miami and W. 41 St. in Miami Beach), Fed. Aid Proj. I-106-1 (1) (Job No. 8709-401), Dade Co. CD 8/20.

▲ **FLORIDA**—State Rd., Dpt., Tallahassee, Bids opened 9/19,

Fla.—**The Scott Co.**, Thomasville, Ga. LB $2,125,211 (7 bidders) superstructure incl. one through-truss channel span of 327 ft. 6-in. 2 rein.-con. spans 22 ft. 3½ in., 4 continuous welded steel plate girder units, each unit being 400 ft. long, 3 spans 123-154-123 ft. lengths and 21 pre-cast prestressed conc. beam spans of 66 ft. each 0.636 mi. over West St. Andrews Bay near Panama City, SR 30 U. S. 98), F 017-2 (12) (Job 4602-207) Bay Co. CD 8/28;

Fla.—**O'Loughlin & Hansen**, Box 2248, Jacksonville, Fla. LB $107,533 (5 bidders) Intracoastal Waterway Channel By-Pass Bridge, approaches 0.246 mi. at Atlantic Blvd., SR 10, State Proj. Job 7210-301, Duval Co. CD 9/6.

▲ **FLORIDA**—State Rd. Dpt., Tallahassee, Bids opened 9/19,

Fla.—**Cone Bros. Contr. Co.**, Box 1301, Tampa, Fla. LB $103,765 (4 bidders) b conc. 8.788 mi. SR 41 (U. S. 301) Jobs 1021-801 and 1405-802, Hillsborough and Pasco Counties. CD 8/28; LB $541,720 (3 bidders) b. conc. limerock base, primed, drainage structure 5,500 ft. long, storm sewers 1.508 mi. SR X-583 (30th St.), State Proj. Job 1059-150 Hillsborough Co.; LB $234,218 (9 bidders) limerock base, primed, surf. tr. b. conc. surf. course, over cut-off canal a 259 ft. bridge prestressed concrete superstructure on concrete pile bents 1.126 mi. SR S-43, Job 1355-151, Manatee Co.; LB $1,695,691 (5 bidders) grading, limerock base, primed, b. conc. surf. course with binder course 5 structures of prestressed concrete deck girders on concrete piers, small drainage structures aluminum handrail, etc. 6.093 mi. SR 435, Jobs 7527-101 and 7527-102, Orange Co. CD 9/6;

Fla.—**Dunn Constr. Co.**, 2508 3 Ave. N., Birmingham, Ala. LB $121,323 (5 bidders) grading (shoulders and front slopes) b. conc. surf. and grassing 10.865 mi. SR 29, and SR 82, Job 0706-801 and Job 1207-802 respectively, Hendry and Lee Counties; LB $103,098 (4 bidders) b. conc. surf., b. conc. surf. course with hot binder course 10.452 mi. SR 780, Jobs 1308-801 and 1703-801, Manatee and Saratoga Counties;

Fla.—**Campbell Paving Co.**, Box 1437, Clearwater, Fla. LB $273,229 (7 bidders) limerock base, primed, b. conc. surf. course with binder course, concrete sheet pile bulkhead at north end of Anclote River Bridge 2.073 mi. SR 595, Jobs 1502-115 and 1403-118, Pinellas and Pasco Counties;

Fla.—**Wright Contr. Co.**, Box 1580, Columbus, Ga. LB $241,600 (5 bidders) grading (shoulders and median) b. conc. surf. 12.987 mi. SR 16, Job 7105-801, SR 230, Jobs 7108-801 and 7109-801 U. S. Military Reservation, Camp Blanding, Clay Co.;

Fla.—**L. L. Hall Constr. Co.**, Orange Park, Fla. LB $74,896 (4 bidders) limerock base, primed, surf. tr. 16,818 sq. yd. Sanford Farmers market parking areas and roads, Job 7749-106, Seminole Co.;

Fla.—**F & M Concrete Co.**, Box 863, Plant City, Fla. LB $79,021 (7 bidders) limerock base, primed, surf. tr., 2 multiple and 1 single concrete box culverts, 60 ft. bridge of concrete slab deck on conc. pile bents 0.415 mi. SR A-1-A, Job 8903-107, Martin Co.;

Fla.—**Brooks Paving Co., Inc.**, 5607 N. W. 27 Ave., Miami 47, Fla. LB $888,081 (6 bidders) limerock wid'n. strips, limerock overbuild b. conc. surf. course with binder course, extending 12 existing concrete box culverts 14.4449 mi. SR 15, Job 9206-122, Osceola Co.;

Fla.—**MacAsphalt Corp.**, Box 627, Lakeland, Fla. LB $299,211 (4 bidders) b. conc. surf. 19.285 mi. SR 35, Job 0402-801; Job 0601-801, SR S-35-A, Job 0658-850, De Soto and Hardin Counties, CD 8/28;

Fla.—**C. T. Stockton**, 660 N. W. 54 St., Miami 37, Fla. LB $236,566 (4 bidders) limerock base, primed, b. conc. surf. course with binder course storm sewers 2.465 mi. SR A-1-A, Job 8706-116, Dade Co.;

Fla.—**Ronlee, Inc.**, 3907 N. W. 27 Ave., Miami, Fla. LB $93,671 (5 bidders) reworking existing base, surf. tr. 2.835 mi. Job 9055-155, Job 9058-155, Job 9062-150, Monroe Co.;

Fla.—**Langston Constr. Co.**, Box 3031, Orlando, Fla. LB $189,439 (3 bidders) limerock base, surf. tr. 3.595 mi., SR S-534A, Job 9251-154, SR S-531-A, 9253-153; SR S-534-A, Job 9256-151, Osecola Co.;

Fla.—**J. W. Conner & Sons, Inc.**, Box 2522, Tampa, Fla. LB $522,560 (8 bidders) limerock base, primed, b. conc. surf. course with binder course, 3.378 mi. SR 70, Job 1316-101, Manatee Co.;

Fla.—**White Constr. Co., Inc.**, Chiefland, Fla. LB $298,461 (6 bidders) limerock stab. base with surf., 9.614 mi. SR Nos. S-354-A and S-251, S-470 (1), (Job No. 3356-250) Job 3356-153 and 3359-150, Lafayette Co.;

Fla.—**San Marco Contr. Co.**, Box 1361, St. Augustine, Fla. LB $363,674 (10 bidders) rock base with surf. tr., 1 concrete box culvert 7.55 mi. SR S-29, S-465 (1) Job 0967-250, Highlands Co.;

Fla.—**Jas. H. Craggs Constr Co.**, Box 22, Gainesville, Fla. LB $148,097 (5 bidders) limerock stab. base with surf. tr., 1 concrete box culvert, 6.152 mi. SRS-132, S-463 (1), Job 3257-200, Hamilton Co.;

Fla.—**Edward M. Chadbourne**, Box 749, Penscola, Fla. LB $80,351 (5 bidders) sand-clay base, primed, surf. tr. 3.065 mi. SR S-290, Job 4871-150, Escambia Co.;

Fla.—**W. M. Boozer Constr. Co.**, Marianna, Fla. LB $156,326 (5 bidders) sand-clay base, primed, b. conc. surf. course with binder course 0.648 mi. SR 10, Job 3051-109 Jackson Co.;

Fla.—**S. M. Wall Co.**, 1650 N.E. 23 Blvd., Gainesville, Fla. LB $297,446. (6 bidders) limerock stab. base, primed, surf. tr. 10.452 mi. SR S-361 and S-361-A, Job 3857-151; SR S-14, Job 3860-152; SR S-359, Job 3864-150, Taylor Co.;

Fla.—**J. D. Manly Constr. Co.**, Box 586, Leesburg, Fla. LB $488,652. (10 bidders) limerock base, primed, surf. tr. with b. conc. surf. course, resurf. b. conc. surf. and leveling course 9.409 mi. SRS-17-A, Job 1667-153, Polk Co.;

Fla.—**W. H. Armston Co., Inc.**, Dunedin, Fla. LB $206,674. (8 bidders) limerock base, primed, b. conc. surf. course with binder course 1.079 mi. Job 1562-150, Pinellas Co.;

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"smoothest arc I ever used . . . and . . . quiet!"
* "it's just plain the MOST"
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Fla.—Brinson-Allen Constr. Co., Box 1455, Tampa, Fla. LB $237,962. (8 bidders) limerock base with b. conc. surf., one 140 ft. concrete slab deck bridge on concrete piling 2.536 mi. SR S-72-A, S-5 (5) (Job 1753-251) and Job 1753-152, Sarasota Co. CD 9/6.

BUILDINGS—LB & CA

▲ Banks & Lee, Inc., Tower Bldg., Wash., D. C., CA $1,591,400 Springfield-Franconia HIGH SCHOOL, FAIRFAX, VA. Fairfax Bd. Educ., Fairfax, Va. Dixon & Norman, 1103 E. Main St., Richmond, Va., archts., CD 2/21/56.

▲ Geo. A. Fuller Co., 1 Peachtree Bldg., Atlanta, Ga. CA $4,175,000. OFFICE BLDG. for State Dpt. of P. Health, ATLANTA, GA. State Office Bldg. Auth., State Capitol, Atlanta, Ga. Bids Sept. 4. CD 9/23, under LB.

▲† Empire Gas Eng. Co., 7 Baltimore Pl. N.W., Atlanta, Ga. LB $237,678. REF reactor cooling, purification and radioactive liquid waste disposal at INDUSTRIAL DEVELOPMENT, for Lockheed Aircraft Corp., Marietta, Air Force Plant No. 6, for Dpt. Air Force, DAWSONVILLE, GA. Bids Sept. 18. CD 8/13. Christian Constr. Co., 3143 Maple Dr. N.E., Atlanta, Ga. LB $1,516,182. radiation effects reactor and operations bldg. Air Force Proj. 114G-11 (Dawsonville, Ga.)

▲ Frank K. H. Conner, Box 1031, Charlotte, N. C. CA $2,329,000. low-rent HOUSING-GA. 1-5, AUGUSTA, GA. Augusta Housing Auth., Augusta, Ga. Bids Sept 3. CD 9/12, under LB.

▲ Heftler Constr. Co., 4102 N. W. 183 St., Miami, Fla., CA $1,780,000. 200 RESIDENCES, 183 St. and 42 Ave., CAROL CITY, FLA. Carol City Co., c/o contractor. Erwin Gerber, 1944 N. E. 163 St., North Miami Beach, Fla. archt.

▲ M. R. Harrison Constr. Corp., 630 N. W. 54 St., Miami, Fla., CA $2,418,730, DORMITORY, 720-unit, Ponce de Leon Bld. and Miller Dr., CORAL GABLES, FLA. University of Miami, 1200 Campo Sano Ave., Coral Gables, Fla. Bids Aug. 20. CD 8/28, under LB.

MIDDLE WEST

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS
STREETS AND ROADS
October 5 Ohio

▲ O., Cleveland—FREIGHT DOCK—BA 10/10—City, Dpt. Port Control, Wm. J. Rogers, dir., City Hall, Zone 14, dock at W. 6th St. $1,500,000. Plans deposit $75. Osborn Eng Co., 7016 Euclid Ave., Zone 3, engr. CD 3/22.

HEAVY CONSTRUCTION—LB & CA

▲† The Great Lakes Dredge & Dock Co., Williamson Bldg., Cleveland, O., LB $1,538,350 est. $1,351,700 (4 bidders), dredging in the Cuyahoga River, OHIO. U. S. Eng., Engineers Park, Buffalo, N. Y.

▲ ILLINOIS—Illinois State Toll Hy. Comn., 20 N. Wacker Dr., Chicago,

Contracting & Material Co., 1235 Dodge Ave., Evanston, Ill., Kenny Constr. Co., 3220 Oakton St., Skokie, Ill., and Louis Garavaglia, 2420 Mound Rd., Centerline, Mich., CA $2,149,512, Contr. E-1B-precast concrete and concrete arch bridge 0.27 mi. over Fox River, etc., near Aurora. Bids Sept. 5, awarded Sept. 20., CD 9/11, under LB.

BUILDINGS—LB & CA

▲ Craig Bldg. Co., 5325 Ridge Rd., Cleveland 29, O. Own Forces. CA $1,500,000. 64 HOMES, off East Wallings Rd., BROADWAY HEIGHTS, O. CD 3/26/56.

▲ Duffy Constr. Corp., Jemison Rd., Evandale, O., CA $2,000,000 general contract 110,000 sq. ft. PLANT to manufacture laminated plastics, EVANDALE, O. Formica Co. (Sub. American Cyanamid Co.), 4620 Spring Grove St., Cincinnati, O. A. M. Kinney, Inc., 2905 Veronica Pl., Cincinnati, O., consult. engr. CD 12/14/55.

▲ H. W. Miller Constr. Co., Inc., Covington, Ky., CA $2,452,800. first phase of Lebanon Medium Security PRISON, LEBANON, O. Ohio Dpt. P. Wks., Columbus, O. Bids Sept. 4. CD 9/10, under LB.

▲ Randy Constr. Co., 2186 S. Taylor Rd., Cleveland, Zone 18, O. Owner Forces $1,530,000. 51 HOUSES, off Broadview Rd. near Sprague Rd., PARMA, O. CD 2/28/56, under D & G Bldg. Co., as owner.

▲ A. V. Stackhouse Co., Inc., 2611 Winthrop St., Indianapolis, Ind., CA $1,500,000, multi story, 525 parking GARAGE, Illinois and Marland Sts., INDIANAPOLIS, IND. Indianapolis Off-Street Parking Comn., Luther Shirley, pres., 946 N. Illinois St., Indianapolis, Ind. D. A. Bohlen & Son, State Life Bldg., Indianapolis, Ind., archts. CD 9/18/51.

WEST OF MISSISSIPPI

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS
BRIDGES
October 10, 11 Texas October 11 North Dakota
STREETS AND ROADS
October 10, 11 Texas October 11 Minnesota, North Dakota

BUILDINGS—BA

▲ **Colo., Denver**—APARTMENTS—Bids Asked—National Farmers Union, Farmers Union Bldg., Mrs. Anna E. Young and Edward T. Young, 2233 S. Jackson St., Selected List of bidders, two 15 story apartments with 201 units, parking inside for 201 cars and outside for 200 cars, Cherry Creek Dr. and Steel St. $3,500,000. O'Neil Ford, 1301 Pennsylvania St., archt.-engr.

BUILDINGS—SLC

▲ **Tex., Dallas**—OFFICE—Mercantile National Bank, c/o Main and Commerce Sts., soon lets contract, 201,297 sq. ft., Mercantile Commerce Office Bldg. addn. $2,500,000. Broad & Nelson, 505 N. Ervay St., Dallas, Tex., and Millard Sheets Design, Inc., Claremont, Calif., archts. Zumwalt & Vinther, c/o Merc. Sec. Bldg. and B. L. Rolfe, 2401-A, Bryan, Dallas, Tex., engrs. CD 8/12.

HEAVY CONSTRUCTION—LB & CA

▲† **J. W. Bateson, Inc.,** Box 13307, Walnut Hill Sta., Dallas, Tex. CA $2,480,540, base exchange complex, Air Force Academy, (IFB) 05-613-58-1, COLORADO SPRINGS, COLO. Dpt. Air Force, Box 1670, Colorado Springs, Colo. Bids Sept. 10, awarded Sept. 17. CD 9/16, under LB.

▲† **Peter Kiewit Sons Co.,** Omaha National Bank, Omaha, Neb., **Morris-Knudsen Constr. Co.,** 319 Broadway Ave., Boise, Idaho, and **Al Johnson Constr. Co.,** Foshay Tower, Minneapolis, Minn. LB $14,452,260 (jointly) power structure, intake shafts and upstream tunnels, near Pierre, Oahe Reservoir Proj., Inv. 25-066-58-17, SOUTH DAKOTA. U. S. Eng., 1709 Jackson St., Omaha, Neb. Bids Sept. 17. CD 8/7.

BUILDINGS—LB & CA

▲ **Fowler-Veranth Constr. Co.,** 303 S. 1 Ave. East, Duluth, Minn., CA $2,195,000. general contract HIGH SCHOOL, BABBITT, MINN. Bd. Educ., J. Patiska, clk., Babbitt, Minn. Bids Aug. 27. CD 9/10, under LB.

▲ **Thos. S. Byrne,** Fort Worth National Bank Bldg., Fort Worth, Tex. CA $3,150,000 Base Bid. HOSPITAL addn., FORT WORTH, TEX. St. Joseph's Hospital, c/o Sisters of Charity of the Incarnate Word, 1400 S. Main St., Fort Worth, Tex. Bids Sept. 5 (on revised plans). CD 9/17, under LB.

FAR WEST

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS
BRIDGES
October 24 California
STREETS AND ROADS
October 23, 24 California

BUILDINGS—BA

▲ **Wash., Olympia**—LIBRARY—BA 10/22—State Capitol Com., Olympia, 2 story, 40x200 ft. and 7 story 50x100 ft. rein.-con. library $1,700,000. P. Thiry, 800 Columbia St., Seattle, Wash., archt. CD 10/13/54.

HEAVY CONSTRUCTION—LB & CA

▲† **IDAHO**—State Hy. Dpt., Boise, **Morrison-Knudsen Co.,** 319 Broadway Ave., Boise, Idaho, CA $1,719,808, constr. roadway, crushed grav. surf. and 5 concrete bridges on 27.728 mi. State 71, Brownlee-Cambridge, and furnish crushed gravel and cover coat material in stockpiles, Washington Co. Awarded Sept. 17.

BUILDINGS—LB & CA

▲ **Andersen & Westfall Co.,** 3427 N. E. Halsey St., Portland, Ore., CA $3,000,000 (6 bidders) DISTRIBUTION CENTER, CLACKAMAS, ORE. Safeway Stores, Inc., 1139 S. E. 3 Ave., Portland, Ore. Bids Sept. 12, awarded Sept. 19. CD 8/20.

▲ **M & K Corp.,** 519 California St., San Francisco 4, Calif., LB $2,937,000 (5 bidders) general work, various HOSPITAL BLDG. ADDNS. at State Hospital, AGNEW, CALIF. State Div. Architecture, 1120 N. St., Sacramento, Calif. Bids Sept. 24. CD 8/16.

▲ **Macomber & Brunzell,** 8818 Melrose Ave., Los Angeles, Calif., CA $4,151,000. Base Bid plus alternates C. L. McLane HIGH SCHOOL, Cedar and Clinton Sts., FRESNO, CALIF. Fresno City Unified School Dist., c/o Supt., 2348 Mariposa St., Fresno, Calif. Bids July 10, CD 8/14, under LB.

CANADA

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS
STREETS AND ROADS
October 9 Ontario

HEAVY CONSTRUCTION—LB & CA

▲ **Atlas Constr. Co., Ltd.,** 4781 St. Catherine St., W., Montreal, Que. CA $1,672,335, 3rd section of Decarie-Raimbault Collector Sewer, between Metropolitan Blvd. and point south of Henir Bourassa Blvd., MONTREAL, QUE. City, City Hall, Montreal, Que. Bids Sept. 11, awarded Sept. 19. CD 9/20, under LB.

BUILDINGS—LB & CA

▲ **Wade Constr. Ltd.,** 417 16 Ave. N.W., Calgary, Alta. Owner Builds. Over $4,000,000. 400-unit HOUSING, Forest Lawn Area, CALGARY, ALTA.

(Proposal Advertisement see pp. 114 to 117)

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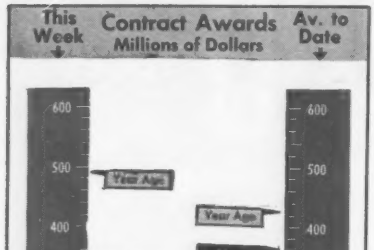
Milwaukee Tampa Cleveland Denver New Orleans

Construction Scoreboard

Activity this Week



AMOUNT OF CONTRACTS LET

By Ownership	This Week	Cum. 40 wks 1957	Chge '56-'57 %
	millions		
Federal	$15.4	$1,911.4	+40
State and Municipal	169.5	5,816.4	+15
Total Public	184.9	7,927.8	+20
Total Private	148.4	6,692.7	−37
U. S. Total	$333.3	$14,420.5	−15
By Type of Work			
Waterworks	$4.5	$266.5	−4
Sewerage	9.5	434.4	−8
Bridges	13.8	561.6	+19
Highways	64.1	2,417.0	+27
Earthwork, Waterways	5.7	858.5	+40
Buildings:			
Public, Excl. Housg.	61.0	1,779.6	+12
Public Housing	7.4	526.2	+96
Private Housing	55.7	2,363.0	−39
Commercial	29.4	1,368.3	−9
Industrial	49.4	2,575.0	−39
Unclassified	32.8	1,270.4	−6
U. S. Total	$333.3	$14,420.5	−15

NOTE: Minimum size projects included are: Waterworks and waterways, $44,000; other public works, $73,000; industrial buildings, $93,000; other buildings, $344,000.

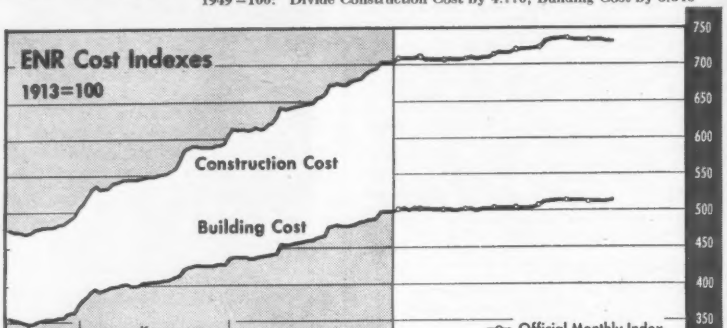
NEW CAPITAL FOR CONSTRUCTION

	Week of Sept. 26	Cum. 39 wks 1957	Chge '56-'57 %
	millions		
Corporate Securities	$118.4	$4,377.5	+16
State and Municipal:			
All Except Housing	152.6	4,147.9	+22
Housing	...	155.8	+268
Federal Loans	4.4	171.7	+31
Federal Aid	...	2,161.2	+102
Total Nonfederal	$275.4	$11,014.2	+31
Federal Appropriations:			
In U. S.	...	$2,777.0	−20
Outside U. S.	...	29.0	+82
Total New Capital	$275.4	$13,820.1	+16

Cost Indexes as of Now

ENR INDEXES (1913=100), 20-cities' average	Week of Sept. 26 1957	% Change from Aug. 29 1957	Sept. 27 1956
Construction Cost	737.36	−0.1	+4.8
Building Cost	516.93	+0.2	+3.5

To convert above indexes to 1926=100: Divide Construction Cost by 2.080; Building Cost by 1.850
1949=100: Divide Construction Cost by 4.770; Building Cost by 3.518



BUILDING COSTS AND PRICE INDEXES
1949=100

	Apr. (A) June (Jn) July (Jl) Aug. (Ag) Sept. (S)	Percent Change from Sept. (S) Mar. (Mr) Apr. (A) May (M) June (Jn) July (Jl) Aug. (Ag)	Year ago
Weighted Cost Indexes (1949=100)			
ENR Construction Cost	155 (S)	−0.1 (Ag)	+4.7
ENR Building Cost	147 (S)	−0.2 (Ag)	+3.2
Associated General Contractors	143 (Ag)	0 (Jl)	+4.5
American Appraisal Co.*	136 (Jn)	+0.8 (M)	+4.7
Marshall & Stevens, Inc	141 (Jn)	+0.2 (Mr)	+3.0
Weighted Price Indexes (1949=100)**			
E. H. Boeckh & Associates, Inc. Commercial & Factory	139 (Jl)	+1.0 (Jn)	+3.8
Smith, Hinchman & Grylls, Inc	145 (Jl)	+0.3 (Jn)	+4.4
Contractor Price Indexes (1949=100)			
Aberthaw	146 (A)	+3.0 (S)	+12.1
Austin	136 (Jn)	+1.3 (Mr)	+5.6
Fruin-Colnon	134 (Jl)	+0.6 (Jn)	+1.8
Fuller	133 (Jl)	+2.2 (A)	+5.8
Turner	141 (Jl)	+0.9 (A)	+6.3

* Adjusted for estimated productivity
** Includes overhead, profit; adjusted for estimated productivity

BUILDING MATERIALS PRICE INDEXES

BLS Primary Market Price Indexes, 1947–49=100	Aug. 1957	Percent Change from Last Month	Year Ago
All Building Materials	131.3	−0.1	−0.2
Lumber	119.6	−0.3	−5.9
Plywood, softwood	88.6	−4.3	−7.1
Building paper and board	141.7	0	+2.6
Portland cement	147.2	0	+5.3
Gypsum products	127.1	0	0
Metal doors, sash, trim	142.8	0	−3.2
Heating equipment	122.7	−0.1	+3.0
Plumbing equipment	129.0	−0.1	−3.8
Prepared paints	128.1	0	+7.6

CONSTRUCTION MACHINERY PRICE INDEXES

BLS Indexes of Manufacturer Prices, 1947–49=100	Aug. 1956	Percent Change from Last Month	Year ago
All Types	161.1	+2.0	+7.8
Power Cranes and Shovels	160.2	0	+7.5
Tractors	175.2	+3.5	+7.6
Scrapers and Graders	153.5	+2.3	+6.9
Mixers and Pavers	143.1	0	+6.4
Machinery, Tractor Mounted	160.2	+2.8	+9.3
Specialized Construction Machinery	144.8	+0.1	+6.6
Portable Air Compressors	156.6	+7.1	+17.6
Air Tools, Hand Held	164.3	+7.0	+9.5

Home Week Promotion Rings the Bell

Builders back observance to the hilt and score a hit; crowds pour to building sites and some bring deposits

Hurt by a sharp drop in housing sales for the second consecutive year, the nation's homebuilders jumped into National Home Week promotions last week with an enthusiasm not even displayed during the best of the industry's years.

An ENR check of a dozen cities across the nation showed that their efforts may prove more fruitful than the optimistic builders had anticipated. In fact, there were indications that the gigantic promotion sponsored by the National Association of Home Builders and its local affiliates may serve to keep housing starts this year above the 1 million mark. Last month, the seasonally adjusted annual rate just managed to top the magic figure for the first time this year, once even dropping as low as 933,000 seasonally adjusted.

The builders were rewarded for their efforts. The public turned out by the thousands on the first two days of the observance, Sept. 21 and Sept. 22. During the week, as expected, the surge subsided but builders indicated that the final weekend was close to matching the first weekend.

Builders and spokesmen for the various local associations, said that even torrential rain experienced in some communities, did not greatly dampen the public's interest.

Eight cities reported that the public turnout was better than last year's Home Week observance and one reported it was about equal to last year. Only three said there was a decline in the population's outpouring, and each of these added it was only a slight one.

• **A buying crowd**—But the factor most cheering to the builders was the fact that the promotion paid off with sales. Five areas reported that firm contracts accompanied by heavy downpayments were much in evidence while the remaining cities said that deposits were being taken in an encouraging number.

Looking at the turnouts and counting the contracts or deposits, many of the builders participating felt that the campaign was just what the doctor ordered. All felt that the time, effort and money expended was being well repaid. In only one city, Seattle, did one builder think the promotion disappointing.

But all the builders were good enough businessmen to know that the time to push a product is when the sales are slipping. They dug down in their pockets to support the associations and also to advertise their houses and tracts. The faint hearts in the industry were conspicuous by their absence.

Some builders and associations took a hard look at their competition, which many believe to be the automobile industry. Plastered prominently on doors, walls, tables and fences were posters blazing forth the message, "Buy Your Home First."

• **Price tags**—Prices went from a low of $9,000 in Norfolk, Va., to a high of $85,000 in Dallas. But the greatest number of houses were concentrated in a comparatively narrow range of $12,000 to $17,000.

The top price line was proportionately as good a seller as the low and middle priced product. Almost all the building associations checked reported that $40,000 or $45,000 houses were snapped up in at least one case.

In St. Louis, one builder happily recounted how his $48,000 house was sold 10 minutes after the door was opened on the first day of the observance.

• **The program**—Most of the promotions took the form of model houses scattered throughout the area, each model on an individual lot or in a development.

Three cities—Dallas, Ft. Worth and Seattle—had a "Parade of Homes," a type of display in which several builders construct several styles of houses in various price classes on one centralized site. Dallas outdid itself in this respect, having four such displays. One group contained houses priced from $16,000; two groups contained $30,000 models while the fourth had luxury homes priced from $50,000 to $85,000.

Two cities—Corpus Christi, Tex. and Norfolk, Va.—fired two barrels and had a centralized home exposition and a panorama of homes scattered at several building sites.

Omaha actually started pushing for volume in August and in quick order had a Parade of Homes, followed by a homebuilding exposition at the city auditorium, ending last week with a wide-ranging display of houses throughout the area.

In general, the promotions of the builders and the various local associations were of the low key type. Gone was the atmosphere of the circus at the housing tracts. The houses were offered on the basis of merit alone.

(*B&F continued on page* 102)

— What the Cities Say About Home Week —

DETROIT: The promotion was needed and most builders were glad to take part. It got the people out to the tracts and the payoff will come when the genuinely interested return to ask questions. Generally, the week was successful but not as great a success as four or five years ago.

DALLAS: The most ambitious showing of new homes with a "better than normal attendance," despite heavy rains.

HARTFORD: The biggest display of homes ever attempted by the local association and one that resulted in a "terrific public response." The demand is strong and this one-week splurge proved it.

ST. LOUIS: The turnout here was better than last year with some tracts drawing as many as 3,000 persons. Sales were also encouraging and more are expected as a result of the push.

SACRAMENTO: Some builders were elated by the response as the desposits came in across the sales desk. Definitely better than last year.

BOSTON: The biggest promotion ever sponsored by the Home Builders Association of Greater Boston and one that brought out the crowds. Many families were in a buying mood and sales are expected to improve during the next few weeks as a result of the splurge.

Economic Stimulus

Maine votes insurance plan for industrial mortgages

A constitutional amendment, approved recently by Maine voters, paves the way for a state program of insuring mortgages on new industrial buildings constructed by local development corporations. The amendment authorizes a loan of the state's credit to bonds of up to $20 million which will back the mortgage insuring program.

The legislature must now create legislation to set up the insurance plan. Gov. Edmund S. Muskie, who led the campaign for state backing of industrial construction loans, is expected to call a special session of the legislature to take action on the plan.

Advocates of the plan emphasized that only local development corporations would get assistance under such a law, but opponents attacked the proposal as leading toward communism and being too "close to a socialistic let-the-government-do-it philosophy."

Present plans call for the establishment of a Maine Industrial Building Authority to administer the program. The mortgage insurance would be applied only to new structures built by local development corporations.

The buildings would be occupied by industrial firms on a straight lease or on a lease-purchase agreement.

The Maine plan normally would guarantee only the monthly payments on the insured mortgage, but will provide authority to liquidate the mortgage and take title in event of a default. Coverage would be limited to $500,000 on any one project.

The voters also approved a $24 million bond issue to supplement current revenues in financing a $165 million interstate highway program under the federal-aid program during the next four years.

The bond issue will allow a start on $36 million in interstate highway construction in the next two years.

Buffalo Officials Warned On Conflicting Interests

Buffalo's municipal government department heads were warned by the Common Council's finance committee that it will refuse to approve contracts with companies whose officers or representatives are members of any city board or agency.

The warning was issued after Councilman Charles E. Weston called the finance committee's attention to a contract for the construction of a smoke stack at the South Michigan Avenue Bridge, which had been awarded to Oldman Boiler Works, Inc. The company is headed by Nelson Oldman, who is a member of the City Planning Commission.

The Oldman firm submitted the second lowest bid of $4,650, but won the contract after the lowest bidder was unable to secure the type of steel specified in the contract.

Public Works Commissioner George J. Goetz said the work was of an emergency nature because the existing stack was nearing a point of collapse.

But Mr. Weston said the city charter specifically states that no member of any city board, commission or agency is allowed to bid on city work. He added that he will vote against the award of any contract to a firm having a member on a city board.

Joseph S. Swartz, administrative assistant to the Public Works Commissioner, replied that if the council held to such a position, a number of contracts would have to be voided.

Go-ahead Signal Is Given $75 Million Development

Thorncliff Park, Toronto's proposed $75 million housing and industrial project, has been given the green light by the Ontario Municipal Board after two years of negotiations. The project, named after the race track formerly occupying the 338 acre site, will consist of:

- Apartment buildings—75 acres. They will be 6 and 18 story structures and contain 4,500 apartments. Rents will range from $100 to $160 a month.
- Industrial plants—55 acres.
- Commercial buildings, including offices—52 acres.
- A shopping center with a 2,000 car parking area—21 acres.
- Three churches and a school—13 acres.
- Park area—28 acres.

The remaining land will be taken up by roads, service facilities and a buffer zone along the Don River, which surrounds the site on three sides.

A major issue that had impeded negotiations was financing of a bridge to span the Don River and connect the project with the Don Mills Road division. The required $850,000 now will be provided through debentures issued by municipal and provincial governments.

The project is located four miles from downtown Toronto and borders a major highway, the Don Valley Parkway.

The corporation is comprised of Canadian and American interests. The project is to be completed in 1961.

Refinery Progress

Fluor gets construction job totaling $50 million

The Fluor Corp., Ltd., of Los Angeles has been awarded a construction contract in excess of $50 million to build Commerce Oil Refining Corp.'s Jamestown, R. I., refinery. Fluor will engineer and construct the 43,000 barrel-a-day facility, with Universal Oil Products Co., Des Plaines, Ill., as architect-engineer on the site.

The facility will cover a 600 acre tract on the northern end of Conanicut Island in Narragansett Bay, near Providence. Fluor estimates that field labor costs will approach $10 million and 1,400 persons will be employed during construction.

Preliminary work already had been done by the Lummus Co. as the oil firm's original plan was to negotiate a construction contract with Lummus. However, Harold G. Geller, executive vice president of Commerce, explained that bidding was opened to other firms because of the size of the investment. Other bidders were M. W. Kellogg Co., of New York City, and the Bechtel Corp., of San Francisco. One reason for choosing Fluor, Mr. Geller said, was its willingness to construct a plant completely designed by another company, in this case UOP.

The refinery project encountered two stumbling blocks during its planning stages. First, the U. S. Navy, with two facilities in the area, objected to the refinery's proposed tanker-unloading pier. The pier might interfere with torpedo tests at nearby Gould Island Test Station, Navy officials believed. This objection was overcome by the company's offer to build an L-shaped pier, equipped with submarine nets and other safety devices to catch stray torpedoes (ENR Sept. 5, p. 28).

A second source of trouble, and one that brought progress delays, was the opposition to the facility by residents of Jamestown and Newport.

Although the number of such opponents was small, it was an extremely vigorous and vociferous group. This sector of the population opposed the refinery on the grounds that it would bring with it, air and water pollution to the area.

These arguments received little support, however, the larger number of residents realized the project would bring economic benefits to the area.

Completion of the refinery is expected within 21 months. Ground clearing is already under way.

(*B&F continued on page 104*)

ENTER THIS CONTEST ...90 CASH PRIZES!

CONTEST RULES

1. Tell in 25 words or less "Why I prefer Albanene tracing paper."
2. Send all entries to K&E Albanene Contest, Box 160, New York 46, N. Y. Enter as often as you wish. There is nothing to buy.
3. Entries must be postmarked not later than midnight, Nov. 30, 1957.
4. Entries become the property of Keuffel & Esser Co. None can be returned.
5. The decision of the judges is final.
6. Winners will be notified by mail. A complete list of winners will be sent upon request, providing request is accompanied by stamped, self-addressed envelope.
7. Contest is open to all residents of continental United States, except employes, and their immediate families, of Keuffel & Esser Co. and its subsidiaries and dealers; its advertising agency; and judges of this contest.
8. Also not applicable to residents of those states where there are prohibitory laws.

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Get contest aids from your K&E dealer: Information booklets, extra contest entry blanks, samples of Albanene, too, if you need them. You can enter as often as you please.

Or use a plain sheet of paper if someone's already snipped the blank below. Give your name, address, and firm name, twenty-five words or less telling why you prefer Albanene tracing paper, and mail to K&E Albanene Contest, Box 160, New York 46, N. Y. before midnight, November 30, 1957.

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Low Yields Block Bond Sales

Kentucky appeals to "patriotism" to sell bonds; Missouri offers $30 million of debt—gets no bids

Kentucky and Missouri have discovered that placing a 3% interest ceiling on proposed bond issues makes them less than a hot item in the money marketplace. Money—like apples, oranges or clothing—has a price and if the buyer isn't willing to pay the price he doesn't get the commodity

In these instances, money is the commodity and both states want to "buy" it. But the interest rate they are willing to pay is not high enough in today's market. Both states also are bound to sell the bonds at par, a discount from their face being prohibited.

In Kentucky, authorized to sell $100 million in bonds for roads, and in Missouri, whose latest issue was for buildings, officials are aware of the two strikes against the debt.

Kentucky's Gov. A. B. Chandler, hoping to obtain buyers for a portion of $100 million of debt authorized, recently suggested that the bonds might be purchased by "patriotic" banks or individuals.

To adhere to such an approach possibly may continue to place the state in the same position as Missouri two weeks ago, when—in its legendary "show me" attitude—it attempted to sell $30 million in bonds at the submarket rate of 3%. The offer landed with a dull thud and not a single bid was received.

Alvin Papin, a member of the Missouri Board of Fund Commissioners, explained that the 3% rate limit could not be boosted because it was fixed by constitutional amendment. He pointed out, however, that the par stipulation could be eliminated by the state legislature, which convened for the purpose this week.

The low yield offered by the bonds of both states was further emphasized when the U.S. Treasury went into the money market with $500 million in 12 year, 4% bonds and shorter term notes and certificates also yielding 4%. The total offering was $3 billion.

The problem in Kentucky is not in the first stumbling block the bonds have encountered. Soon after voter-approval last November of the bond act authorizing the bonds, a suit was initiated to test the act's validity (ENR Jan. 31, p. 74). The court subsequently upheld the legislation.

The proposed issue would be backed by the full faith and credit of the state and be secured by revenues paid into the road fund.

Under the act approved by the voters, the bonds would have a term of 30 years. There is a possibility, however, that this may be revised.

• **Record debt**—Kentucky voters obviously place great importance on the issue. Financial authorities say that authorization of debt of this magnitude, to their knowledge, is unprecedented in the state. It also is believed that Kentucky has not issued any bonds during the Twentieth Century, although Moody's Investors Service reported that between 1925-35 there was fairly substantial debt outstanding in the form of general fund warrants.

A move to sell the a portion of the issue was made at a meeting of 70 bankers and investment executives invited to the session by the Kentucky Bankers Association. There, Dr. James W. Martin, state commissioner of finance, announced that efforts would be made shortly to sell some of the authorized bonds. He added that they would be payable sooner than state officials had hoped would be necessary. Other sources indicated that any of the bonds sold might mature in perhaps 1 to 10 years, a sharp drop from the original 30 year term.

At another meeting, Governor Chandler told the Louisville Chamber of Commerce that sale of bonds to individuals was "under consideration," but such a sale would depend on whether the state's banks took the issue.

Following the finance commissioner's presentation, some slight encouragement was offered by a committee of the bankers association. It recommended that the state offer up to $35 million of the bonds. However, no other advice was extended.

The money obtained from the sale of the bonds would be used to match federal funds for Kentucky's share of the interstate highway system.

Few solid proposals for making the bond issues of both states have been offered by their officials. But both may have to take action similar to that of Delaware. There, a special session of the legislature acted to remove the 3% interest rate ceiling on all bond issues of the state (ENR Sept. 5, p. 140).

New York Tightens Title I Contracts

New York City's Board of Estimate has drastically tightened the contracts governing the developers of Title I slum clearance projects. A total of 15 changes or additions were made, but the group still failed to eliminate the major weakness of the city's redevelopment program—that of turning the land, buildings and people over to the developer.

In all other cities, the municipality or a public agency selected by the city handles tenant relocation.

The contract changes were announced in conjunction with the approval of a pilot contract for the Seward Park Houses, a $20 million redevelopment project on the lower east side of Manhattan. The revisions came three months after Manhattantown, Inc.; a $37.5 million project, was foreclosed by the city and turned over to Webb & Knapp, Inc.

The weaknesses of the city's contracts with developers were spotlighted at that time, for after having had title to the land for five years the original sponsors of Manhattantown had not razed a single building (ENR July 4, p. 24).

Amending and strengthening of redevelopment requirements also came after 30 months of repeated urgings and recommendations from the Housing and Home Finance Agency and its Urban Renewal Division. And the reaction of the federal agency to the changes was clearly one of "Well, it's about time."

Walter S. Fried, regional administrator of the HHFA, pointedly said, "We are gratified, that after 2½ years of urging all of the changes, the city has finally decided to act on our recommendations." He added that the agency, including Albert M. Cole, the nation's housing chief, also would like the city to adopt the practice of all the nation's other communities—assume responsibility for tenant relocation itself, rather than leaving it to the developers.

• **Relocation modifications**—Although neglecting to go all the way with respect to tenant relocation, the city has added to a developer's responsibility in removing occupants of the existing buildings.

Under the old provisions no specific relocation schedules were established. Now, a schedule will be drawn up, and defined sections of a tract will have to be cleared every three months. The tenants in the areas must be relocated in the allotted time. Failure to keep pace with the step-by-step schedule will be considered as a sponsor default that

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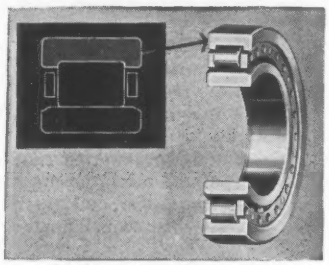

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will entitle the city to repossess the area.

In addition, the sponsor will have to file reports to the city every six months on tenant relocation.

Neither will a developer be offered a possible opportunity to make a profit through tenant location. Formerly, relocation costs were included in the disposal price of the land to the developer. No longer will such an allowance be made. The sale price will cover only the cost or value of the land, and the expense of relocating tenants will have to be paid out of the rents received from buildings in the area.

• **Profit from failure**—Another major revision makes it impossible for a developer to profit by his failure to perform. Formerly, a sponsor who failed was given any profit the city might collect from the resale of land that it had repossessed from the defaulting developer. Now the city will retain any profits that might be acquired.

Also eliminated from new contracts is the so-called risk fee allowance. Old agreements automatically entitled the developer to a 10% credit as a cost of operating a project. This credit was allowed before the profit and loss was figured by the developer.

• **Other contract changes**—The Board of Estimate also decided that it could maintain a closer watch on the developers by revising some of the accounting requirements. Under the old agreements, a sponsor was required to submit an audit from a certified public accountant only once a year. Under the new regulations, the certified public accountant audit must be presented to the city every three months.

A developer must also set up a cash reserve with which to pay the city first for taxes, water and services before other bills are paid. In addition, sponsors will have to provide a 10% performance bond to protect the city against default. This is the only stipulation that had not been suggested by the HHFA.

Other changes will:

• Ban the charging of legal fees to a project as an operating cost.

• Eliminate the allotment of 5% of gross operating revenues to a management firm to manage the project.

• Prohibit the hiring by the sponsor of persons having a direct or indirect relationship with him unless he has received at least two competitive bids.

• Prohibit the establishment of parking lots on land cleared for new housing.

• Prohibit sponsors from renting appliances to themselves and charging it to operations.

Construction Markets

Tampa, Florida: An On-the-Spot Report

Tampa's building industry is enjoying a construction boom that has almost become a way of life. Building authorities believe it is a condition that will be with them in the near future—and also accept it as a long-term phenomenon.

Leaders in government and industry watch the continued influx of new industry and commerce and, with typical community-booster spirit, say that because it's located in the "fastest-growing state east of the Rockies" the area must and will, continue to flourish.

According to builders, engineers, bankers and politicians, an economic fact as powerful as location in a dynamic state will serve to overcome any "temporary deterrent" of tight money.

Residents of the region have their hands on a pleasant economic brew they feel cannot be quickly consumed. And the head on the construction industry's draft has been supplied by Joseph Schlitz Brewing Co. and Anheuser Busch, Inc., both of whom have started, or plan to start, the building of $60 million worth of facilities.

Schlitz has started work on its $20 million installation, while Anheuser will spend an equal amount on its own brewery. Anheuser also plans construction of facilities for manufacture of yeast, syrup and vitamins that will call for capital outlays of another $20 million.

Tampa Electric Co. goes to the top of the list, however, in dollar outlay. The utility has started one $15 million unit of a $30 million steam power plant that is 50% complete. The second $15 million unit will be under way late next year.

But the firm trend of growth and the one that is intimately linked to Tampa's expansion is the Pinellas County peninsular area. The section is developing into a production center for electronics equipment.

The three largest projects already started in that section are those of Minneapolis-Honeywell Regulator Corp., $4 million; General Electric Co., $2 million and Sperry-Rand Corp., $2 million. And these giants in the electronic field perhaps will encourage other companies of the same type to locate on the peninsula.

The arrival of industry has brought with it a surge in population growth. Tampa is adding new residents at a rate of 1,000 a month and Pinellas at the rate of 2,000 a month. The combined population of the two areas now stands at approximately 500,000, with the total split almost equally between the two areas.

To encourage the growth and also keep pace with the problems of servicing the community, the city of Tampa launched a $20 million bond issue to be used for construction of two new bridges over the Hillsborough River and a new police station.

A tight money market, however, has served to place a slight drag on the housing market in Tampa. The Veteran's Administration home loan program that has withered on the vine compounded the problems of homebuilders, because they had been constructing nearly 75% under the program.

But the housing picture in Pinellas is in sharp contrast to that of Tampa proper. There, the workers apparently have accumulated cash resources, enabling them to meet the downpayment requirements, with the result that construction of houses is moving ahead rapidly.

The rapid pace of housing construction in the Pinellas section has served to boost Tampa starts so far this year by 11% over last year. Gloom, therefore, is not one of the articles carried in the builders' tool chests.

Many actually anticipate a better sales market in this year's final quarter, but tie the improvement to an easing of the mortgage market. To this extent, some builders may be counting their foundations before they are dug.

Those in the non-residential construction field are equally optimistic. The attitude was supported when the Tampa chapter of the Associated General Contractors granted liberal wage increases to carpenters, laborers, bricklayers, ironworkers and operating engineers. It hoped that the new contracts will insure comparative labor peace in most categories for two to three years during a period of booming growth in the area.

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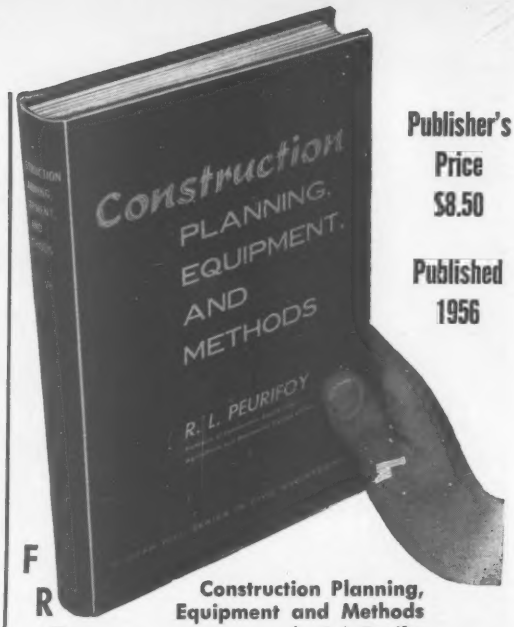

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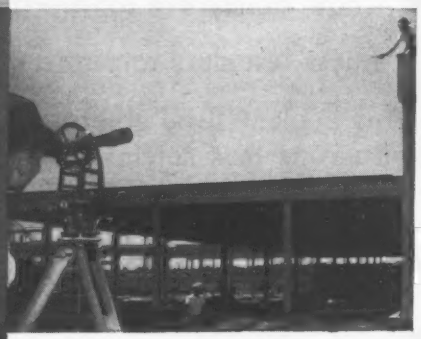

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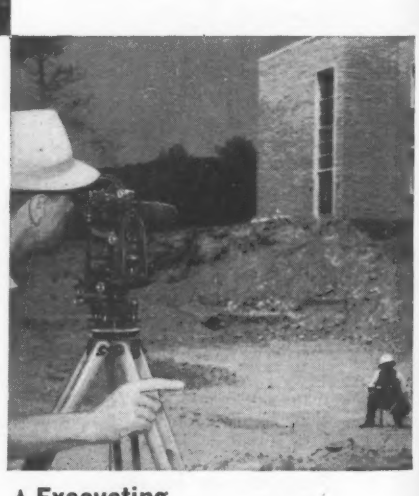

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Teamsters Reach the Crossroads

Union convention opens in Miami with unequivocal warning from AFL-CIO to clean house or get out

As a result of a sweeping ultimatum issued in New York City last week by the Executive Council of the AFL-CIO, the International Brotherhood of Teamsters is now deciding its destiny in Miami Beach, where the union's seventeenth convention opened on Monday.

The ultimatum was in the form of a resolution which declares that the teamsters union is violating the AFL-CIO constitution by permitting itself to be substantially dominated or controlled by corrupt influences. The union was given until Oct. 24 to prove that satisfactory corrective measures have been taken. On default, the union faces suspension from the AFL-CIO. Under the federation's constitution, ouster from the AFL-CIO automatically would suspend the union from the Building and Construction Trades Department.

Effect of the action was to serve notice on the delegates to the Miami convention that ouster of the teamsters will in all probability be the penalty of failure to strip President Dave Beck and law-entangled International Vice Presidents James Hoffa, Frank Brewster and Sidney Brennan of union office.

Only vote against the resolution was cast by teamster Secretary-Treasurer John F. English, who was named to the council after the AFL-CIO suspended Mr. Beck. AFL-CIO President George Meany said Mr. English had made a plea against hasty action and had expressed the conviction that the teamsters will clean house if given a chance.

The Executive Council specifically ordered and directed the 1.4 million member teamsters union to:

- Correct union abuses that have been disclosed.
- Eliminate corrupt influences from the union.
- Remove "and bar from any position or office" those responsible for the abuses.

Concurrently with the Executive Council action, the beleaguered Mr. Hoffa, then leading contender for the union presidency, was under fire on several other fronts. While the Senate Select Committee was uncovering further evidence of Mr. Hoffa's misconduct and of irregularities in the selection of union delegates to the Miami convention, a federal grand jury handed down a five count indictment of perjury against Mr. Hoffa in a wire tapping case now pending. Meanwhile, in another federal court, an injunction suit nearly blocked election of officers at the teamsters' convention on the charge the election has been rigged in an effort to asure Mr. Hoffa's succession to President Beck.

Through adoption of a 64 page report on teamster affairs compiled by the AFL-CIO Ethical Practices Committee, the Executive Council found, among other things, that Mr. Beck and Mr. Hoffa have used union funds for personal purposes and their official union position for personal profit. It concluded that Mr. Hoffa and Mr. Brewster have abused union health and welfare funds and that Mr. Hoffa has promoted the interests of notorious labor racketeers. And it found that the teamsters, derelict in their duties, have failed to take any action against corrupt officials or to investigate use of the Fifth Amendment by union officers during recent investigations.

In commenting on the ultimatum, AFL-CIO President George Meany said the Executive Council has adhered closely to the provisions of the AFL-CIO constitution. Under those provisions, the council may, at its Oct. 24 meeting in New York City, suspend the teamsters by a two-thirds vote if the union fails to purge itself of the corruption charge. An appeal could be taken to the AFL-CIO convention, which opens in Atlantic City Dec. 5, but the suspension would be effective pending such appeal.

By incorporating the Ethical Practices Committee report in its ultimatum, the Executive Council has made it clear that the teamsters can't avoid suspension merely by adoption of a more democratic constitution, as Mr. Hoffa has proposed, nor by conducting such limited investigations as one that has been made into the issuance of charters to paper locals in New York. The report considers both proposals inadequate and unconvincing.

And as a further warning to the teamster delegates, the AFL-CIO has demolished some of the principal defenses periodically voiced by teamster leaders. This was done by adopting the EPC report, which states that:

- The autonomous rights of international unions within the federation do not embrace the right to be corrupt.
- Evidence of corruption has not been limited to isolated cases and the activities of Messrs. Beck, Hoffa, Brewster and Brennan have alone been enough to bring the entire union into disrepute.
- The protection afforded by the Fifth Amendment does not bar a union investigation into corruption. Instead of triggering off an automatic suspension of union officers who use the Fifth Amendment, the AFL-CIO ethical practices code places on the affected unions the burden of determining whether the constitutional privilege was used as a shield against proper scrutiny into corruption within the union.

Unions Blame Inflation On Industry, not Labor

Continuing its efforts to obtain a full scale Congressional investigation of the relationship between prices, wages and profits, the AFL-CIO is attempting to focus public attention on the problem of inflation through two new union publications. One is a film called, "Do Higher Wages Cause Higher Prices," and the other is a pamphlet entitled "Wages and Prices."

The basic question considered by the AFL-CIO is whether wage increases cause price increases. The federation's answer is "No."

The film is intended for both union and nonunion distribution, including use by schools, colleges and community groups. In announcing its availability, AFL-CIO President George Meany said: "Higher wages are necessary for a growing and expanding economy. The film presents material designed to answer the false charge that higher wages cause higher prices."

The pamphlet presents three main arguments:

- Business, labor, consumers, farmers and government must hold back inflation through a "cooperative effort."
- Our economy can expand and remain strong only if rising incomes create enough consumer purchasing power to buy the goods produced by American farms and factories.
- Crux of the inflationary problem lies in the "profiteering" pricing policies of basic industries such as steel, oil, aluminum and cement. Because of high profits and productivity, there "is no reason why each wage increase in these basic industries must be passed along in the form of greatly higher prices."

(*Labor continued on page* 110)

Urge Secession From AFL-CIO

Midwestern building trades would quit federation if conflict with industrial unions is not solved

The State Building and Construction Trades Councils of seven midwestern states last week urged that the 19 international unions comprising the AFL-CIO building trades secede from the AFL-CIO unless a satisfactory solution is found to the jurisdictional conflict between the federation's industrial unions and its building trades.

Meeting in a two-day multi-state conference at Detroit, 164 state council delegates representing 350,000 construction workers in Illinois, Indiana, Michigan, Minnesota, Ohio, Wisconsin and Missouri called upon the AFL-CIO Building and Construction Trades Department to put the secession proposal before the department's next regular convention, which will be held in Atlantic City, Dec. 2-4. This action was an endorsement of a resolution adopted several weeks ago by the Ohio State Council (ENR Sept. 12, p. 153).

The Detroit secession resolution was one of 12, most of which recommended some course of action aimed at halting all union mergers at state and local levels until the jurisdictional problem is solved to the satisfaction of the building trades. And conference sentiment made it clear that an acceptable solution must embrace recognition of all construction, including additions, alterations and repairs, as work of the building trades.

Building Trades' President Richard Gray, ordinarily mild mannered and conciliatory, was visibly distressed over the public airing of the building trades' rebellion but told the delegates that he won't give in to the CIO unions "without a fight." "We would like to see a unified labor movement," he said, "and have taken every honorable means to accomplish it . . . but we are ready to fight and I am confident you will fight."

Mr. Gray charged that CIO representatives have sabotaged all earlier efforts to find a solution to the jurisdictional problem and agreed with many of the convention speakers that the problem has grown worse, rather than better, since the AFL-CIO was formed two years ago. There is, he said, only one alternative left to the skilled trades: "Stop the merger at the state and local levels until we get justice."

There was a good deal of sentiment simultaneously expressed in private by the delegates that if the teamsters union is ousted from the AFL-CIO (see page 109), the building trades should pull out of the federation and form an alliance with the teamsters. "You can't build much more than a doghouse without the truck drivers," one delegate observed, "and if we tie up with them I don't see how anyone can keep us from getting the work we're entitled to."

• **The problem**—The building trades claim that the members of industrial unions are performing an increasing amount of inplant construction work historically belonging within the jurisdiction of the building trades. They have insisted on an interdepartmental peace formula that will preserve and protect their jurisdiction and, as a lever to achieve their goal, once before tried to block local mergers which must be completed under the AFL-CIO constitution by Dec. 5.

While the building trades' discontent was boiling over in Detroit, the top command of the AFL-CIO again was wrestling with the problem in a four hour meeting of a 12 man jurisdictional subcommittee of the federation's Executive Council. That meeting, held in New York City on Sept. 26, ended, like its predecessors, without a solution to the conflict that's plagued the merger since its inception. At its last meeting in June, the subcommittee proposed a new approach to the problem but the building trades, at a special convention in August, refused to accept the proposal unless it is clarified to their satisfaction (ENR Aug. 15, p. 179).

Underscoring the seriousness of the problem—a problem which president Gray told the Detroit delegates affects the economic well-being of contractors —the California AFL building trades two weeks ago urged the California State Federation of Labor to resist merger with the CIO State Industrial Union Council unless the CIO "clearly and unmistakably" recognized the "traditional jurisdiction of AFL building crafts."

• **Midwest sentiment**—Except for Mr. Gray, most of the speakers at the Detroit conference were concerned primarily with the loss of work to the less skilled and less highly paid industrial union workers. Mr. Gray clearly acknowledged the impact the jurisdictional conflict has had on the construction industry. "We are jeopardizing the finances and capital investment of those undertaking construction work," he said, "and interfering with the ability of management to carry out the work." Referring to the use of non-contracting-out clauses in labor contracts, he asked: "How long will management put up with such interference?"

Most dramatic and uncompromising speech of the conference came from Jack Briendenbach, author of the Ohio resolution. "The CIO," he said, "was born in deceit and reared in infamy. It did all it could to ruin the AFL. When it was on its last legs, gasping for breath, this merger was railroaded through to save it. . . . The building trades are being sacrificed on the altar of one man's ego, another man's lust for power. . . . The CIO accepts the merger as an open season hunting license for AFL jurisdiction, particularly that of the building trades."

Typical of sentiment expressed by building tradesmen were these:

Said conference president Thomas Murray, who assailed "pilfering of our jurisdiction by these Johnny-come-latelies. . . . The CIO is losing sight of the fact that the building trades have done all types of construction work for three quarters of a century. The merger will never be successful until our rights in this field are fully recognized."

Joseph Cousin of St. Louis, secretary-treasurer of the conference stated: "I think the building trades are big enough and potent enough to go it alone if we have to. If we have to give what the CIO demands, I see no reason to go along with the merger. . . . The Building Trades Department ought to push its authority to the limit."

• **Prospects**—Talk about the steps that may be taken if the building trades lose their fight was rampant and diverse. Although President Gray cautioned that "nobody knows what's going to happen," the three courses talked about most were these:

• If the AFL-CIO refuses to extend the deadline for mergers, the building trades would defy the merger order.

• If the AFL-CIO completes the mergers itself, the building trades would refuse to pay the per capita tax to the merged bodies. "We could be expelled, of course," observed one delegate, "but no one is going to force the issue with a big, strong local."

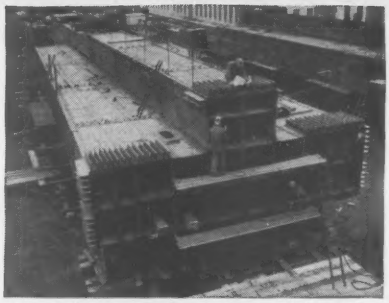
• Pull out entirely from AFL-CIO.

And to top it off, the idea of boycotting all jobs on which the CIO gets even a piece of construction work was suggested frequently.

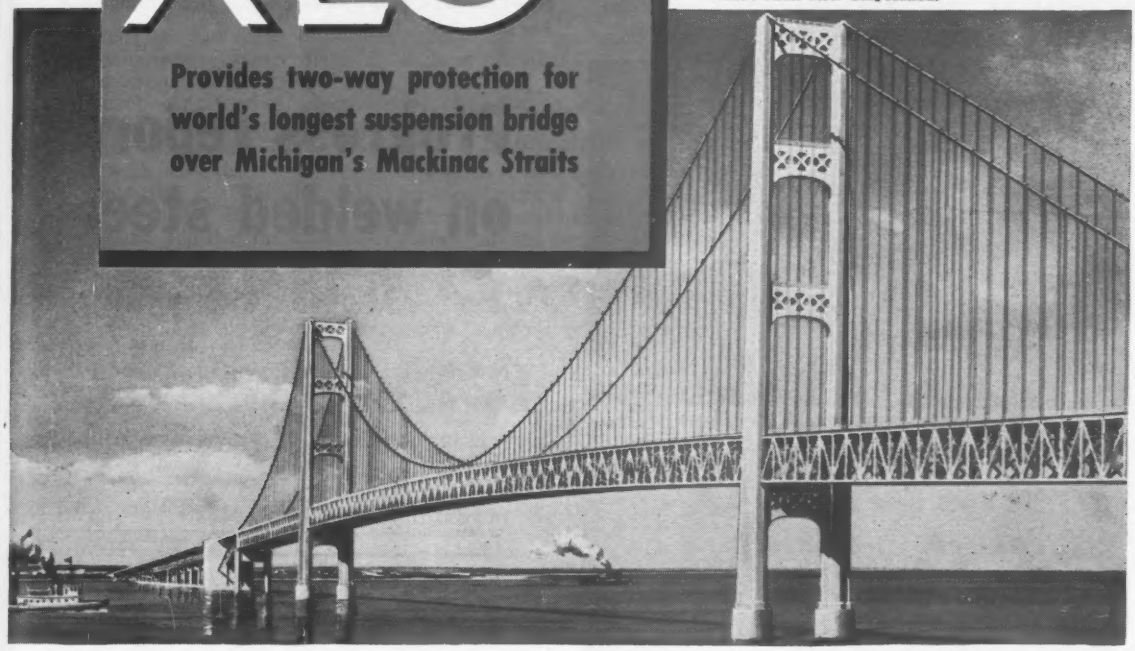
(*Labor continued on page* 113)

Pittsburgh's X-L-O STRUCTURAL STEEL PRIMER

Provides two-way protection for world's longest suspension bridge over Michigan's Mackinac Straits



One of the tower sections being assembled at Ambridge Plant of the American Bridge Division, United States Steel Corporation.



1. Safeguards steel shapes against corrosion during transit and erection

2. Makes an excellent foundation for field painting

A **70-YEAR** dream come true! That's the new five-mile bridge now being erected to link Michigan's upper and lower peninsulas. This huge project was designed by Dr. D. B. Steinman. The American Bridge Division, United States Steel Corporation, is fabricating the 75,000 tons of structural steel for its superstructure and major portions of the foundation caissons and cofferdams.

This giant project features a suspension bridge with a center span of 3,800 feet, two 1,800-foot side spans, and two 472-foot unloaded backstay spans. Total length, including anchorages, is 8,614 feet, making it the world's longest suspension bridge.

Structural shapes for this viaduct are shopcoated with Pittsburgh's X-L-O Primer to protect them against corrosion during storage, transit and erection. This remarkable finish eliminates need of costly metal cleaning. Its remarkable wetting characteristics assure uniform coverage even over surface irregularities caused by mill scale. Satisfactory through drying of film within twenty-four hours, regardless of weather, makes possible prompt shipment to job sites.

X-L-O Primer also serves as an excellent foundation for final coats. Pittsburgh's IRONHIDE and METALHIDE, in suitable colors, are available for field coating.

Why not call on us for advice or suggestions to protect structural steel on your jobs? Wire, write or phone Pittsburgh Plate Glass Company, Industrial Sales Division, 1 Gateway Center, Pittsburgh, Pa.

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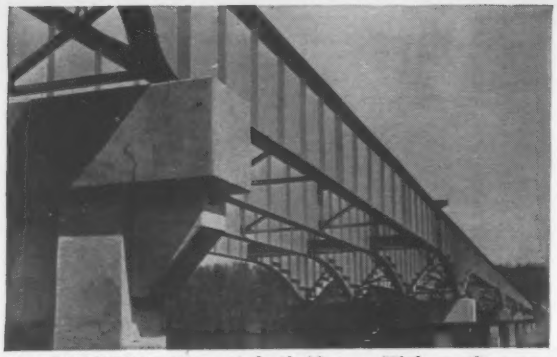
PITTSBURGH PLATE GLASS COMPANY

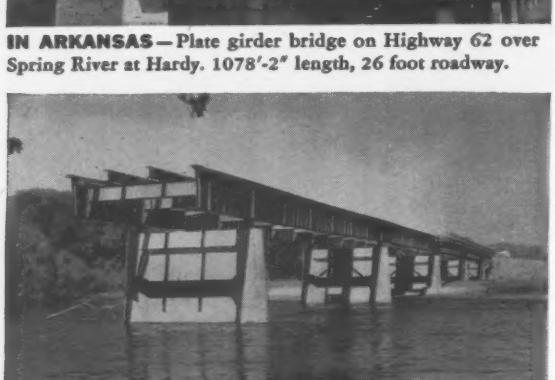
IN CANADA: CANADIAN PITTSBURGH INDUSTRIES LIMITED



IN ARKANSAS—Plate girder bridge on Highway 62 over Spring River at Hardy. 1078'-2" length, 26 foot roadway.

IN FLORIDA—Two span continuous girder bridge over the Suwannee River, 150'-150'.

IN IOWA—Continuous girder bridge over Cedar River, Linn County. Two 117 foot spans and six 150 foot spans.



IN CONNECTICUT—West River Bridge over Route 69 and West River. Continuous plate girder with 2 spans of 125 feet, 31 foot roadway.

Progress report on welded steel bridges

IN Connecticut, Iowa, Arkansas—all over the United States highway departments are taking advantage of the savings realized by welded construction.

In addition to 15%-20% less steel required, welded bridges are built faster—have a more pleasing, modern appearance.

DESIGN HELPS FOR ENGINEERS

"Studies in Structural Arc Welding" sent free to structural engineers.

Bridge Design Seminars are conducted regularly at our plant in Cleveland.

"Procedure Handbook of Arc Welding Design and Practice". New 11th Edition has over 1,300 pages, 466 page section devoted to structural design for arc welding. $3.00 postpaid in U.S.A. $3.50 elsewhere.

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When welded bridges save steel

Have simpler construction

Yet cost less

WHY

aren't all bridges designed for welding?

Attack Wage Schedule

New Mexico contractors seek to upset state's prevailing wage system

The validity of a 20 year old New Mexico law that empowers the state labor commissioner to set minimum wage rates on public projects has been challenged by Associated Contractors of New Mexico.

Filing of the contractors' suit in the district court at Santa Fe followed Labor Commissioner Charles Burrell's approval of an order boosting wage rates in a number of categories effective Oct. 1. The court action delays indefinitely the effective date of the new prevailing wage schedule.

The contractors contend the state law under which Mr. Burrell acted is unconstitutional and that the Commissioner set the new minimum rates without first determining what the prevailing wages are.

According to Robert Miller, manager of the contractor association, the contractors are not necessarily protesting the amounts of the scheduled wage increases. Labor costs, he said, are passed on to the taxpayers anyway, "but we protest vigorously the fact that the labor commissioner made no attempt whatever to find out what the prevailing wages really are and arbitrarily set as the statewide minimum the wages that are being paid to union workmen."

Mr. Miller said only 10 or 11 of the nearly 50 road contractors in New Mexico have labor contracts and that these carry wage scales 10 to 15 cents an hour higher than those for nonunion workers. "Nonunion workers greatly outnumber union workers on road projects in New Mexico, so how can the Labor Commisisoner contend the union scale is the prevailing wage?", he asked.

The association's suit contends the state legislature failed to set up standards by which prevailing wages should be determined.

Under the new rates set by Mr. Burrell, covering all workers in highway and street construction, carpenters would move from $2.65 to $2.75, laborers from $1.60 to $1.75, dump truck drivers from $2.05 to $2.15 and bulldozer operators from $2.52 to $2.65. In general building and heavy construction, rates for linoleum, asphalt tile and carpet layers, and plastic and metal tile setters would be increased from $2.75 to $2.88, and, for journeymen roofers, from $2.30 to $2.45.

The prevailing wage issue has long been a controversial one. Organized labor has asked consistently for its extension, claiming that governmental agencies should not use public purchasing power to depress local wage standards by permitting the employment of workers at substandard rates, often to the disadvantage of local contractors. Contractor criticism, on the other hand, has been directed generally at the method of determining prevailing wages rather than at the theory itself. Latest extension of the prevailing wage at the federal level was in the new federal highway program, where wage rates are required to be set by the Secretary of Labor after consultation with local highway officials.

Professionals Win Plea For a Separate Election

The U. S. Circuit Court of Appeals for the District of Columbia has ruled that the National Labor Relations Board cannot include non-professionals in a collective bargaining unit for the purposes of a representation election if an all-professional unit has been requested.

The result is that the court upheld a U. S. District Court injunction against the NLRB requiring a separate election for professional employees under Sec. 9(b)(1) of the Taft-Hartley Act. Over the protest of the Buffalo Section of Westinghouse Engineers Association, an affiliate of Engineers and Scientists of America, the NLRB had included nine non-professionals in the voting unit it established for a representation election. The board claimed that it had the right to do so as long as the unit remained "predominently professional".

In overruling the NLRB contention, the Circuit Court said: "Section 9(b)(1) expressly forbids inclusion of professionals and non-professionals in the same bargaining unit unless a majority of the professional employees vote for inclusion in such unit. It is clear that this provision was intended to protect the professionals; that the professionals' right to this benefit does not depend on Board discretion or expertise; and that denial of this right must be deemed to result in injury. Thus this case presents Board violation of a statutory requirement and resulting injury".

Medical Project Boosts Job Prospects for Many

What are the employment opportunites generated for construction workers by a $17 million building project?

The answer, in one instance, has come from Paul Tishman General Contractor, Inc., which has been awarded the contract for a 15 story U. S. Naval Hospital to be built in Portsmouth, Va. Because of unusual interest in job opportunities the project will afford, the firm has announced that it expects to employ about 450 skilled and unskilled workers, with the total number of men employed over the job's 2-year span totaling 1,000.

Approximate breakdown by crafts; as estimated by Tishman, is this: 15 hoisting and operating engineers; 100 carpenters; 60 structural steel and iron workers; 150 brick masons; 20 roofers; 35 lathers; 60 plasterers; 10 tile setters; 10 glaziers; 15 elevator constructors; 65 plumbers and steam fitters; 15 sheet metal workers; 45 painters; 200 common laborers, and other trades in general proportion.

Work on the project is scheduled to begin during the first week in November, with structural steel work commencing in December. Completion date is December, 1959.

Employment interest in the hospital project has resulted largely from local unemployment problems created by navy production cutbacks and the layoff of many civilians in the Fifth Naval District.

Boycott of Burt Products Reported to Be at an End

A sheet metal workers' boycott of ventilating equipment manufactured by Burt Manufacturing Co., Akron, Ohio, virtually has ended. Commenting on the boycott, AFL-CIO President George Meany said in New York City last week that he had been informed within the last 10 days that not a single instance exists of sheet metal worker refusal to install Burt equipment.

The boycott, which has occurred intermittently over a period of nearly two years, has been a protest by the sheet metal workers against performance of what they consider their work by steelworkers in the Burt plant. Burt is organized by United Steelworkers of America. In April, a special committee of the AFL-CIO Executive Council ruled the boycott constituted union raiding in violation of the federation's constitution. The committee was appointed after steelworkers' President McDonald had lodged a formal protest.

Mr. Meany stated there may be instances, however, where contractors or other firms are reluctant to contract for use of Burt equipment because of the fear of a boycott. In such cases, Mr. Meany said he has offered to write any firm with such qualms and tell them he has the assurance of the sheet metal workers' general president that the material will not be boycotted.

(*Labor continued on page 114*)

Agreement Seeks to Curb Jurisdictional Disputes

Efforts to eliminate jurisdictional work stoppages at the $3.5 million Cheatham power plant now under construction near Nashville, Tenn., have been undertaken by management and labor. Under an agreement concluded last month, disputes will be submitted to a special joint committee, and work will continue while the disputes are under consideration.

The agreement was signed by Al Johnson Construction Co., general contractor, and 17 members of the Nashville Building and Construction Trades Council.

The power plant, scheduled for completion late next year, is now 66% complete, according to the Nashville District Corps of Engineers. Work stoppages stemming from jurisdictional disputes have caused numerous delays in the construction work. Elimination of such stoppages is the primary purpose of the agreement.

Committee members will consist of three representatives of the Nashville Building Trades Council and three from the Nashville Chapter of Associated General Contractors of America. The two groups will mutually select a seventh member from disinterested parties.

Disputes not settled by the committee will be referred to the construction industry's National Joint Board for the Settlement of Jurisdictional Disputes.

Contractor Is Not Liable For Worker's Pneumonia

A contractor cannot be held responsible if one of his employees comes down with pneumonia on the job, according to a decision of the Rhode Island Workmen's Compensation Commission.

A carpenter employed by Wilkinson Co. had filed a petition for compensation, claiming he had developed pneumonia last April after doing some repair work in a damp and unheated cellar of a Providence store that had been damaged by fire.

In dismissing the petition, Commissioner Herman D. Ferrara cited medical evidence that pneumonia is a disease transmitted from one person to another, although the virus "usually attacks one whose resistance is lowered," and "is not peculiar to the occupation of a carpenter."

Mr. Ferrara said he was satisfied on the basis of medical evidence that the claimant's illness was not the result of the conditions under which he had been working.

OFFICIAL PROPOSALS

APPEAR HERE EACH THURSDAY. PROPOSAL ADVERTISEMENTS ACCEPTED UP TO 10:30 A.M. FRIDAY FOR THE ISSUE DATED THE FOLLOWING THURSDAY.

Bids: Oct. 8, 1957.

Power Authority of the State of New York Advertisement for Proposals for the Construction of Relocation of Norwood & St. Lawrence Railroad Facilities Near Waddington St. Lawrence County, New York Specifications No. PA-5-11034 St. Lawrence Contract No. 42

NOTICE TO CONTRACTORS: The POWER AUTHORITY OF THE STATE OF NEW YORK will receive sealed proposals for Construction of Relocation of Norwood & St. Lawrence Railroad Facilities near Waddington, St. Lawrence County, New York, until 10:30 A.M. Eastern Daylight Saving Time on the 8th day of October, 1957, at the Authority's office, 18th floor, The Coliseum Tower, 10 Columbus Circle, New York 19, New York, at which time and place the proposals will be publicly opened and read aloud.

The estimated quantities of the principal items of work are:

Excavation, unclassified	81,000 cu. yds.
Excavation, sand borrow	36,000 cu. yds.
Compacted embankment	40,000 cu. yds.
Uncompacted embankment	80,000 cu. yds.
Sand and gravel for fill under riprap and road material	9,200 cu. yds.
Dumped quarry riprap	3,800 cu. yds.
Gravel and boulder blanket	2,000 cu. yds.
Railroad track—laying new, raising existing and removal of abandoned track	16,400 lin. ft.
Reinforced concrete in structures	187 cu. yds.
Furnishing and erecting structural steel	75,000 lbs.
Furnishing and laying 6 inch cast iron water line	1,850 lin. ft.
Furnishing and installing corrugated metal pipe culverts sizes 12, 18, 24, 30 and 36 inch	594 lin. ft.
Relocating railroad depot, buildings and two operating cranes	
Relocating electrical substation and distribution system	

All of the construction work shall be completed on or before October 1, 1958.

Plans, Specifications and Proposal Forms for the work may be obtained from the Power Authority of the State of New York, at the 18th floor, The Coliseum Tower, 10 Columbus Circle, New York 19, New York, upon application and prepayment of a fee of Ten ($10.00) dollars per initial set of contract documents, and Five ($5.00) dollars per set for additional sets, no part of which will be refunded. Plans, Specifications and Proposal Forms for the work will be on file in the Authority's office and in the offices of the Engineer, Uhl, Hall & Rich, 230 Congress Street, Boston 10, Massachusetts, and The Hydro-Electric Power Commission of Ontario, 620 University Avenue, Toronto 2, Ontario and may be inspected by prospective bidders during office hours.

Bids must be made in duplicate in accordance with instructions contained in the Information for Bidders. Guarantee will be required with each bid in an amount not less than 20 percent of the gross sum bid.

The right is reserved to reject any or all bids.

W. S. CHAPIN
GENERAL MANAGER

Bids: October 22, 1957.

Power Authority of the State of New York Niagara Power Project

ADVERTISEMENT FOR PROPOSALS
FOR
THE FURNISHING AND DELIVERY
OF
180,000 KVA THREE PHASE POWER TRANSFORMERS
FOR
LEWISTON POWER PLANT
SPECIFICATIONS NO. PA-N-25003
NIAGARA CONTRACT NO. NP5

NOTICE TO CONTRACTORS: The POWER AUTHORITY OF THE STATE OF NEW YORK will receive sealed proposals for the furnishing and delivery thereof f.o.b. Model City, New York, of 180,000 kva, three phase power transformers for the Lewiston Power Plant in Lewiston, Niagara County, New York, until 10:30 A. M. Eastern Daylight Saving Time on the 22nd day of October, 1957, at the Authority's Office, 18th Floor, The Coliseum Tower, 10 Columbus Circle, New York, 19, New York, at which time and place proposals will be publicly opened and read aloud.

Bids will be received for 13, 7, or 6 power transformers and associated equipment in accordance with the bidding schedules.

Delivery of power transformers will be required beginning on or before October 1, 1959.

Bids will not be restricted to American manufacturers.

Plans, Specifications and Proposal Forms for the work may be obtained from the Power Authority of the State of New York, at 18th Floor, the Coliseum Tower, 10 Columbus Circle, New York 19, New York upon application and prepayment of a fee of Ten ($10.00) dollars per initial set of contract documents and Five ($5.00) dollars per set for additional sets, no part of which will be refunded. Plans, Specifications and Proposal Forms for the work will be on file in the Authority's Office and in the offices of the Engineer, Uhl, Hall & Rich, 230 Congress Street, Boston 10, Massachusetts, and may be inspected by prospective bidders during office hours.

Bids must be made in duplicate in accordance with instructions contained in the Information for Bidders. Guarantee will be required with each bid in an amount not less than 20 percent of the maximum price bid for any bid schedule.

The right is reserved to reject any or all bids.

W. S. CHAPIN
GENERAL MANAGER

U. S. Government

Sealed bids will be received in the office of the Engineering and Construction Director, Panama Canal Company, Balboa Heights, Canal Zone, until 1 P. M. November 15, 1957 and at that time publicly opened, for the material and work required to furnish and install a coordinated system of remote supervisory control, telemetering equipment, protective relaying equipment, and other appurtenant material for the Canal Zone power facilities. Plans and specifications are available for examination in the office of Chief, Procurement Division, Panama Canal Co., 21 West St., New York 6, N. Y. Data may be obtained upon payment of $50.00 deposit which will be refunded when data is returned within 40 calendar days after bid opening. For further information contact this office, Desk No. 1, or telephone Bowling Green 9-5380, extension 56.

OFFICIAL PROPOSALS

Bids: October 10, 1957.

New York State Road Work

NOTICE TO CONTRACTORS: STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.,—Pursuant to the provisions of the Highway Law, and special provisions for projects financed with Federal Aid Funds, sealed proposals will be received until ten-thirty o'clock A.M., advanced standard time, which is nine-thirty o'clock A. M., eastern standard time, on the 10th day of October 1957, by Henry A. Cohen, Director, Bureau of Contracts, 14th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., for the following projects:

County	Contract No.	Name	Miles	Type	Deposit	Estimated Cost of Work
DISTRICT No. 3; Wm. Robinson, District Engineer, 333 E. Washington St., Syracuse, N. Y.						
Onondaga	PSC 17627	Elimination of Grade Crossing of the N.Y.C.R.R. with Main St., Village of Minoa and Synder Rd., Town of Manlius	0.92 (0.44) (Acc.)	9" Cem. Conc. Pavt. 24', 40' Wide=0.86 mi; Asph. Conc.=0.37 mi. Misc. Work=0.13 mi. RR Sep. Comp. I-Beam 185' Br. Prestressed Conc. 118.5' Extend Exist. Pedestrian Overpass	$55,000 Plans $15	$1,002,000
DISTRICT No. 5; E. G. H. Youngmann, District Engineer, 65 Court St., Buffalo 2, N. Y.						
Chautauqua (Rte. 17)	FARC 57-53	Falconer Village, S.H. 5067 Falconer-Kennedy, S.H. 698 Proj. F-449(7)	1.21	9" Cem. Conc. Pavt. 48' Var Wide=1.01 mi; Asph. Conc.=0.19 mi. Misc. Work=0.01 mi. Comp. I-Beam Br. 160'	$50,000 Plans $15	$878,000
Erie (Rte. 5)	FAC 57-13 FAC 57-14	City of Lackawanna: Arterial Route, Fuhrmann Blvd-Hamburg Tpke. Viaduct (Ridge Rd.-North City Line) Cont. 4 City of Buffalo: Arterial Route, Fuhrmann Blvd.-Hamburg Tpke. Viaduct (South City Line-Tifft St.) Cont. 4. Proj. U-750(12)	1.10 (2.68) (Acc.)	Viaduct Substructure=0.56 mi. Asph. Conc. Ty. 2A=1.41 mi. Grading with Gravel Surface=1.27 mi. Grading with Stone or Slag Surface=0.22 Misc. Work=0.32 mi.	$215,000 Plans $50	$3,894,000
Erie	C 57-17	City of Buffalo: Fuhrmann Blvd. High Level Bridge	1.20	Beam Type Curb Barrier=1.10 mi. Misc. Work=0.10 mi.	$3,900 Plans $10	$57,000
Niagara	FAC 57-15	City of Niagara Falls: Arterial Route Walnut Ave. & Ferry Ave. (Main St. to Pine Ave. and Packard Rd.) Proj. U-500(9)	4.35	Asph Conc.=4.22 mi. Misc. Work=0.13 mi. Pre-Stressed Conc. Br. 76'	$80,000 Plans $25	$1,435,000
DISTRICT No. 7; R. W. Sweet; District Engineer, 444 Van Duzee St., Watertown; N.Y.						
St. Lawrence, N.Y. and Grenville, Ontario.; Canada	OBA 57-3	Ogdensburg Bridge, Cont. No. 3	....	Superstructure for 2150' Suspension Bridge	$350,000 Plans $15	$6,000,000
St. Lawrence (Rte. 37)	FAC 57-16 FASH 57-19 FARC 57-171	City of Ogdensburg: Rte. 37, Arterial; City of Ogdensburg: Rte. 37 Connection: Ogdensburg-Morristown, Pt. 1, S.H. 878; Ogdensburg-Waddington, Pt. 1, S.H. 5497 and Ogdensburg-Waddington, S.H. 9357 Proj. U-UG-650(7)	6.87	Asph. Conc.=6.87 mi. 1 RR Sep. Comp. I-Beam 544.5' 1 RR Sep. Cont. I-Beam 172.28' 1 Hwy. Sep. Comp. I-Beam 151.66' 1 R.C. Open Box Bridge 23.4'	$195,000 Plans $100	$3,570,000
DISTRICT No. 8; K. G. Rauer; District Engineer, Pleasant Valley Road, Poughkeepsie, N. Y.						
Columbia.; Putnam, Orange & Rockland	R.C. 57-160	Br. No. 1, S.H. 1933; Br. No. B-1, S.H. 1221; Br. No. 1; S.H. 153; Br. No. B-2, S.H. 153; Br. No. B-1, S.H. 449; Br. No. B-1, S.H. 5297; and Br. No. 1, S.H. 8049A	....	Cleaning & Painting 7 Bridges	$500 Plans $10	$10,000
Rockland & Westchester (Rte. 6)	BMB 57-1	Bear Mountain Bridge	0.47	Asph. Conc. Ty. 4A=0.45 mi. Cem. Conc. Pavt.=0.02 mi.	$5,000 Plans in Proposal $5	$84,000
Westchester	SMRP 57-1	Saw Mill River Parkway (Mt. Kisco-Katonah, Pt .2)	2.03	Roadside Development	$4,000 Plans $10	$69,000
DISTRICT No; 10, M. E. Goul, District Engineer, 325 W. Main St., Babylon, L. I., N. Y.						
Bronx	FIBE 57-3	Bruckner Expressway (Sect. 1, Cont. 2) Proj. I-U-1086(6)	1.03 (1.14) (Acc.)	9" Cem. Conc. Pavt. (Ramp)=0.05 mi. Cem. Conc. Deck Traffic Surface (Viaduct)=1.01 mi. Sheet Asph. Pavt. & Misc. Work=1.11 mi. 76 Span Comp. Girder & I-Beam Viaduct 5330.1'	$900,000 Plans $100	$16,340,000
Nassau & Suffolk (Rtes. 24, 25, 25A, 27)	RC 57-170	Various Highways in District 10 as Follows: S.H. 545, 9020, 1048A, 1274, 1883, 8181, 8229 & S.H. 52-3; S.H. 52-12	14.64	Landscaping	$3,500 Plans $10	$61,000
Nassau & Suffolk	SSP 57-1	Southern State Parkway (Cont. 14)	4.83	Furnishing & Erecting Aluminum Chain Link Fencing	$6,200 Plans $10	$113,000

Any projects in this letting that are on the Federal Aid highway systems are subject to the provisions of the "Federal-Aid Highway Act of 1956", being Public Law 627, 84th Congress, approved June 29, 1956, and are also subject to the applicable New York State statutes.

In compliance with the provisions of Section 115 (Prevailing Rate of Wage) Public Law 627, the minimum wages to be paid laborers and mechanics are included in wage schedules that are set out in the bid proposal.

Maps, plans, specifications and proposal forms may be seen and obtained at the office of the State Department of Public Works, Bureau of Contracts, Albany, N. Y., and at the office of the District Engineers noted above, and may also be seen at the office of the State Department of Public Works, 270 Broadway, New York City.

Re: O.B.A. 57-3, St. Lawrence County, N. Y., and Grenville, Ontario, Canada: Maps, plans, specifications and proposals may be seen and obtained at the offices of Dr. P. L. Pratley, 909 Drummond Building, Montreal, Canada, and at Modjeska and Masters, Forster at 6th Street, Harrisburg, Pa.

The deposit for Plans and Proposal Forms for each contract is indicated above. A refund will be made in full to bidders for return of one set, in good condition, within 30 days of award, or rejection of bids; refund for all other sets in good condition, similar period, will be 50% of deposit.

Special attention of bidders is called to "General Information for Bidders" in the proposal, specification, and contract agreement, and to the special provisions applying to projects financed with federal funds. Award of a contract is subject to priorities and allocations under the Defense Production Act of 1950, as amended, and all regulations issued thereunder.

Proposal for each contract must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by draft or certified check payable to the order of the "State of New York, Commissioner of Taxation and Finance" for the sum as specified in the advertisement and the proposal. The retention and disposal of the bidding check, the execution of the contract and bonds shall conform to the provisions of the Highway Laws, as set forth in "Instructions to Bidders".

The right is reserved to reject any or all bids.

JOHN W. JOHNSON
SUPT. OF PUBLIC WORKS

Bids: Oct. 10, 1957.

Delaware River Port Authority of the Commonwealth of Pennsylvania and the State of New Jersey
Administration Building
Camden, New Jersey
Walt Whitman Bridge
Contract No. 13

Sealed bids will be received for Landscaping and Miscellaneous Work for the Walt Whitman Bridge, known as Contract No. 13, at the office of the Executive Director of the Delaware River Port Authority, Administration Building, Bridge Plaza, Camden, New Jersey, until 2:30 P. M., Eastern Daylight Time, Thursday, October 10, 1957, at which place and time they will publicly opened and read by the Authority.

A more complete description of the work and full information for bidders are given in the Contract Documents and Specifications for this Contract, which may be obtained upon the deposit of $10.00 check, which will be remitted upon receipt of bid or the return in good condition of the copies so taken, within thirty days after the opening of bids.

Each proposal must be accompanied by a certified check in the sum of $10,000 payable to the Delaware River Port Authority and drawn upon a National or State Bank or Trust Company having an office or place of business either in Philadelphia, Pennsylvania or Camden, New Jersey, and must not be enclosed with the sealed bid. The surety's consent must be shown. The bidder to whom the contract is awarded will be required to furnish a Performance and Labor and Materialman's Bond in the sum of 100 percent.

The Authority will afford prospective bidders an opportunity to inspect the site of the Work.

The Authority reserves the right to waive any informalities in the bids received; to reject any or all bids, and to award the contract only to those experienced in this class of work and to the bidder whose proposal is deemed by the Authority to be most advantageous to the public interest.

DELAWARE RIVER PORT AUTHORITY
JOSEPH K. COSTELLO
EXECUTIVE DIRECTOR

OFFICIAL PROPOSALS

Bids: October 15, 1957

Power Authority of the State of New York Advertisement for Proposals for the Construction of the Seaway Power Facilities

NEAR MASSENA, ST. LAWRENCE COUNTY, NEW YORK
SPECIFICATION NO. PA-5-14043
ST. LAWRENCE CONTRACT NO. 41

NOTICE TO CONTRACTORS: THE POWER AUTHORITY OF THE STATE OF NEW YORK will receive sealed proposals for the construction of the Seaway Power Facilities near Massena, St. Lawrence County, New York, until 10:30 A.M. Eastern Daylight Saving Time on the 15th day of October, 1957, at the Authority's office, 18th floor The Coliseum Tower, 10 Columbus Circle, New York 19, New York, at which time and place proposals will be publicly opened and read aloud.

The principal items of work are estimated:

40 wood pole structures—All materials furnished by the Contractor.

3 units of power supply for tower obstruction lighting—All materials except transformers furnished by the Contractor.

The work shall be completed on or before May 15, 1958.

Plans, Specifications and Proposal Forms may be obtained only from the Power Authority of the State of New York, the Coliseum Tower, 10 Columbus Circle, New York 19, New York, upon application and prepayment of a fee of Twenty-Five ($25.00) dollars for initial set of Contract Documents and Fifteen ($15.00) dollars for each additional set, no part of which will be refunded. Two sets must be returned with each bid.

Plans, Specifications and Proposal Forms for the work will be on file in the Authority's office and in the office of the Engineer, Uhl, Hall & Rich, 230 Congress Street, Boston 10, Massachusetts, for the inspection by prospective bidders.

Bids must be made in duplicate in accordance with instructions contained in the Information for Bidders. Guarantee will be required with each bid in an amount not less than twenty (20) percent of the gross sum bid.

The right is reserved to reject any or all bids.

W. S. CHAPIN
GENERAL MANAGER

Bids: October 29, 1957

Contract 39

ALLEGHANY COUNTY SANITARY AUTHORITY
SEWAGE TREATMENT PLANT

Sealed bids or proposals for Contract 39 for constructing the chimney at the Pittsburgh Sewage Treatment plant will be received at the office of the ALLEGHANY COUNTY SANITARY AUTHORITY, 701 Civic Building, 200 Ross Street, Pittsburgh 19, Pennsylvania until 2 P.M. E.S.T. on Tuesday, October 29, 1957, and then publicly opened and read.

Drawings and contract documents may be examined and obtained at the office of the AUTHORITY, 701 Civic Building, 200 Ross Street, Pittsburgh, Pennsylvania. A deposit of one hundred dollars ($100) will be required on each set of drawings and contract documents taken which will be refunded on receipt of a bona fide bid and return of the drawings and specifications in good order within sixty (60) days. Only fifty dollars ($50) will be refunded to those who return the drawings and specifications in good order within sixty (60) days after the bidding date but do not submit a formal bid.

Bid security shall be furnished by certified check or bid bond for ten (10) per cent of the bid price. The successful bidder must furnish a performance bond and a labor and material men's bond each for 100% of the contract price.

The right is reserved to reject any or all bids.

ALLEGHANY COUNTY SANITARY AUTHORITY
Edmund S. Ruffin, Jr., Chairman

READ THE OFFICIAL PROPOSAL COLUMN OF
ENGINEERING NEWS-RECORD
THIS WEEK AND EVERY WEEK

OFFICIAL PROPOSALS

Bids: October 10, 1957

New Gates and Lowering Sill on Erie Canal

STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.—Pursuant to the provisions of the Barge Canal Improvement Law and Highway Law, sealed proposals will be received, until 10:30 A.M., D.S.T., October 10, 1957 by Henry A. Cohen, Director, Bureau of Contracts, 14th Floor, the Governor Alfred E. Smith State Office Building, Albany, N. Y. for:

Contract U.S.-95 for New Gates and Lowering the Lower Sill at Lock 12, Erie Canal, Tribes Hill, Montgomery County, New York

Maps, plans and specifications may be examined and obtained at the following offices:

(a) Bureau of Contracts, 14th Floor, The Gov. Alfred E. Smith State Office Bldg., Albany, New York.
(b) Department of Public Works, 270 Broadway, New York City, N. Y.
(c) In addition to the above mentioned offices, plans, maps and specifications for Contract U.S.-95 may be examined and obtained at the office of Mr. Lacy Ketchum, 109 North Genesee Street, Utica 1, New York.

The deposit for Plans and Proposal Forms for Contract U.S.-95 is $10.00. A refund in full will be made to bidders for return of one set in good condition within 30 days of award or rejection of bids; refund for all other sets in good condition, similar period, will be 50% of deposit.

The Engineer's Estimate of Cost for Contract U.S.-95 is confidential and will be made known at the time of receiving bids.

Proposals for Contract U.S.-95 must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by draft or certified check, payable to the order of the "State of New York, Commissioner of Taxation and Finance" for the sum of five percentum, (5%) of the bid. The retention and disposal of the bidding check, the execution of the contract and bonds shall conform to the provisions of the Barge Canal Improvement Law and to the Highway Law as set forth in "Instructions to Bidders" in the contract specifications.

The right is reserved to reject any or all bids.

JOHN W. JOHNSON
SUPT. OF PUBLIC WORKS

Bids: Oct. 30, 1957.

Triborough Bridge and Tunnel Authority

SEALED BIDS WILL BE RECEIVED BY Triborough Bridge and Tunnel Authority at its office, Administration Building, Randall's Island, Manhattan, New York 35, N. Y., as follows:

Until 11 A. M. on Wednesday, October 30, 1957.

For Throgs Neck Bridge Contract No. TN-4A, Bronx Anchorage Foundation and Superstructure. The bid must be accompanied by a deposit in the amount of $250,000.00.

and

For Throgs Neck Bridge Contract No. TN-4B, Queens Anchorage Foundation and Superstructure. The bid must be accompanied by a deposit in the amount of $300,000.00.

Foundations will be open dredged caissons located in East River, in the City of New York

Bidders may submit bid for either one or both of the above contracts.

Plans, specifications and contract documents may be purchased at the office of the Authority for $30.00, which will not be refunded.

U. S. Government

Department of Commerce, Bureau of Public Roads, September 18, 1957. SEALED BIDS will be received at the office of the Bureau of Public Roads, Gatlinburg, Tennessee, until 10:00 a.m., E.S.T., OCTOBER 17, 1957, for Project 2UV4, Blue Ridge Parkway, Haywood and Transylvania Counties, North Carolina. Paving and other work from Wagon Road Gap 11.276 miles to Beech Gap. The principal item of work is 22,000 tons Hot Bituminous Concrete Pavement. Minimum wage rates have been fixed as required by law. Plans, specifications and proposal forms are available upon request at the office of the Regional Engineer, 1440 Columbia Pike, Arlington, Virginia, or at the address given above. H. J. Speiman, Regional Engineer.

OFFICIAL PROPOSALS

Bids: October 17, 1957.

New Jersey Turnpike Authority

ADVERTISEMENT FOR PROPOSALS
CONTRACT NO. N-87 (N-87A, N-87B)

Proposals are invited for Contracts Nos. N-87, N-87A and N-87B which involve the furnishing and installing of additional reflectorized and painted traffic signs and reflectorized borders on existing signs, and other incidental work, along the New Jersey Turnpike, extending from the Delaware Memorial Bridge Interchange in Deepwater, Salem County, to the George Washington Bridge Interchange in Ridgefield Park, Bergen County, along the Newark Bay-Hudson County Extension extending from the Newark Airport Interchange in Newark, Essex County, to the New Jersey portals of the Holland Tunnel in Jersey City, Hudson County, and along the Pennsylvania Extension in Burlington County.

Contract No. N-87A includes the furnishing and installing of 64 traffic signs and the removal of two existing signs, along the Newark Bay-Hudson County Extension; Contract No. N-87B includes the furnishing and installing of 366 traffic signs and reflectorized borders on 229 existing traffic signs along the entire Turnpike including both extensions. Contract No. N-87 comprises all the work under Contracts Nos. N-87A and N-87B. If a bidder submits a proposal for Contract No. N-87 he must also submit proposals for Contracts Nos. N-87A and N-87B.

Proposals will be received at the New Jersey Turnpike Authority Administration Building, New Brunswick, New Jersey, until 11:00 o'clock, Eastern Daylight Saving Time, on the morning of October 17, 1957, at which time and place said proposals will be publicly opened and read.

Each bidder must submit with his proposal a Contractor's Financial and Equipment Statement.

Contract documents may be examined during office hours on or after September 26, 1957, at the office of the Authority and at the office of the Consulting Engineers, Howard, Needles, Tammen & Bergendoff, 99 Church Street, New York 7, New York. Contract documents will be furnished upon payment of Ten Dollars ($10.00) for each set, upon application to the Authority. Contract documents are not required to be returned and the payment will not be refunded.

NEW JERSEY TURNPIKE AUTHORITY
Joseph Morecraft, Jr., Chairman
September 23, 1957

OFFICIAL PROPOSALS

RATE: The rate for Official Proposal Advertising is $2.10 per line (or fraction) per insertion.

COPY RECEIVED: up to 10:30 A.M. Friday for issue out following Thursday subject to space open for last minute ads.

SEND COPY: to Official Proposal Division, Classified Adv. Div., P. O. Box 12, New York 36, N. Y.

OFFICIAL PROPOSALS

Bids: October 10, 1957.

Soil Explorations and Foundation Investigations

STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.—Pursuant to the provisions of Highway Law, sealed proposals will be received until 10:30 a.m. Advanced Eastern Standard Time, on October 10, 1957, by Henry A. Cohen, Director, Bureau of Contracts, 14th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y. for:

SOIL EXPLORATIONS AND FOUNDATION INVESTIGATIONS AT VARIOUS SITES ON INTERSTATE ROUTE 511, CROSS BRONX EXPRESSWAY, MAJOR DEEGAN EXPRESSWAY INTERCHANGE, INCLUDING BRIDGE OVER HARLEM RIVER, PROJECT 1-1084(28), BRONX COUNTY, WHICH CONSTITUTES CONTRACT NO. SPEC. FA-SM-106.

Maps, plans and specifications may be examined and obtained at the following offices:

(a) Bureau of Contracts, 14th Floor, The Governor Alfred E. Smith State Office Building, Albany 1, N. Y.

(b) Mr. M. E. Goul, District Engineer, New York State Department of Public Works, 325 West Main Street, Babylon, Long Island.

(c) Mr. William M. Trainer, Associate Contract Engineer, Department of Public Works, 270 Broadway, New York City.

The deposit for a set of plans, specifications and proposal forms is $5.00. A refund in full will be made to bidders for return of one set in good condition within 30 days of award or rejection of bids; refund for all other sets in good condition, similar period, will be 50 percent of deposit.

The Engineer's Estimate of cost for this work is $34,925.00.

Proposal for this contract must be submitted in separate sealed envelope with the name of the contract plainly endorsed on the outside of the envelope. Proposal must be accompanied by draft or certified check, payable to the order of the "State of New York, Commissioner of Taxation and Finance" for the sum of $2,000.00. The retention and disposal of the bidding check, the execution of the contract and bonds shall conform to the provisions of the Highway Law, as set forth in "Instruction to Bidders".

The right is reserved to reject any or all bids.

J. W. JOHNSON
SUPERINTENDENT OF PUBLIC WORKS

Bids: Oct. 23, 1957.

Triborough Bridge and Tunnel Authority

SEALED BIDS WILL BE RECEIVED BY Triborough Bridge and Tunnel Authority at its office, Administration Building, Randall's Island, Manhattan, New York 35, N. Y., as follows:

Until 11 A. M. on Wednesday, October 23, 1957.

For Throgs Neck Bridge Contract No. TN-3, Two Tower Piers, Boroughs of Bronx and Queens, in the city of New York.

Piers will be founded on open dredged caissons located in East River.

Each bid must be accompanied by a deposit in the amount of $200,000.00.

Plans, specifications and contract documents may be purchased at the office of the Authority for $30.00 which will not be refunded.

U. S. Government

Department of Commerce, Bureau of Public Roads, September 18, 1957. SEALED BIDS will be received at the office of the Bureau of Public Roads, First National Bank Building, Florence, Alabama, until 10:00 a.m., C.S.T., OCTOBER 18, 1957, for the construction of Project 3H21-3J9, Natchez Trace Parkway, Webster and Choctaw Counties, Mississippi. Paving and other work from US 82 to near French Camp. Length: 23.397 miles. The approximate quantities of the more important items are as follows: 48,600 cu. yd. Excavation and Borrow, 90,000 tons Gravel for Stabilized Shoulders and Base, and 36,000 tons Hot Bituminous Concrete Pavement. Minimum wage rates have been fixed as required by law. Plans, Specifications and proposal forms are available upon request at the address given above, or Bureau of Public Roads, 1440 Columbia Pike, Arlington, Virginia. H. J. Spelman, Regional Engineer.

OFFICIAL PROPOSALS

Bids: October 28, 1957.

Constructing New Water Treatment Plant

FOR
THE WATER WORKS DEPARTMENT
OF
THE CITY OF ATLANTA, GEORGIA

Sealed proposals for Constructing New Water Treatment Plant will be received by the Purchasing Agent of the City of Atlanta, Georgia, at the City Hall. Bids will be opened publicly and read publicly at a joint meeting of the Purchasing Committee and the Water Committee of the City of Atlanta, Georgia, and must be deposited with the undersigned prior to the beginning of said joint meeting at 2:00 P.M., E.S.T., October 28, 1957. No bid may be withdrawn after the scheduled closing time for receipt of bids for at least sixty (60) days.

Work to be Done: The work to be done consists of constructing a new Raw Water Pumping Station and Water Treatment Plant for an initial daily normal capacity of twenty million gallons per day.

The work is separated into four divisions, each of which may be awarded as a separate contract, as follows:

Division One: General Structural and Building Work for Raw Water Pumping Station and Water Treatment Plant, including Raw Water Supply Line approximately 1500 feet long, outside plant pipe lines and drain lines, and appurtenances.

Division Two: General Mechanical Work for Plant Operating Equipment and Instrumentation, including inside heavy operating piping and appurtenances.

Division Three: General Mechanical Work for Raw Water Pumping Station and Filtered Water Pumping Station, including pumping units, electrical power work, station piping, and appurtenances.

Division Four: Steel Wash Water Reservoir, and appurtenances.

Proposals: All proposals must be accompanied by a certified check, drawn in favor of the City of Atlanta, Georgia, in the amount of at least three (3%) per cent of the Lump Sum Bid for each division; such check representing a guarantee that the successful bidder, if awarded the contract, will promptly enter into a contract and furnish performance bond and payment bond as required by law and approved by the Attorney for the City of Atlanta, Georgia, each bond equal to one hundred (100%) per cent of the contract amount. This check shall be forfeited to the City as liquidated damages if the Bidder fails to execute contract and provide Performance Bond and Payment Bond within ten (10) days after notice that he has been awarded the contract. Each Bid submitted shall be accompanied by a written Financial Statement from a Bank or other Financial Corporation as to the Bidder's ability to carry out the contract if awarded to him.

A schedule of minimum wages to be paid all classes of labor and trades on the work must accompany all bids.

Plans, Specifications and Contract Documents: Plans, specifications and Contract Documents are on file at the office of the Purchasing Agent, Atlanta, Georgia, and at the office of Wiedeman and Singleton, Engineers, 760 West Peachtree Street, N. Y., Atlanta, Georgia, and may be obtained from Wiedeman and Singleton, Engineers upon written request and deposit of One Hundred Twenty-five ($125.00) dollars.

Upon submission of proposal and return of plans within thirty (30) days after the date of receiving bids, the full amount of the deposit will be refunded to each actual bidder. Upon return of plans, specifications and contract documents within thirty (30) days after the date of receiving bids, fifty ($50.00) dollars will be refunded to those other than actual bidders. The difference between the amount of the deposit and the amount of refund represents the cost of reproduction.

The right is reserved to accept or reject any and all bids, and to waive informalities.

CITY OF ATLANTA, GEORGIA
By: /s/ Ernest J. Brewer
Purchasing Agent

OFFICIAL PROPOSALS

EMPLOYMENT OPPORTUNITIES

REPLIES (Box No.): Address to office nearest you c/o This publication Classified Adv. Div.
NEW YORK: P. O. Box 12 (36)
CHICAGO: 520 N. Michigan Ave. (11)
SAN FRANCISCO: 68 Post St. (4)

POSITIONS VACANT

Wanted by New Mexico General Contractor! Experienced estimator capable of eventually assuming Chief Estimator's duties. College Education preferred but not required. P-6071, Engineering News-Record.

Established heavy contractor, water mains, sewers, treatment plants in New York State, has opening for alert younger engineer with proven background in field and office, for responsible charge of take off, purchasing, expediting, liaison etc. in main office. In return for interest, sound experience, performance, hard work & hustle we offer only well compensated opportunity to advance with growing organization. P-5918, Engineering News-Record.

This firm is in need of Analysts, Estimators, Apprentices and Statistical Typists. Also local sales Representatives. Male or Female. Construction Survey Co., 101 Park Avenue, New York 17, N. Y.

Wanted—Experienced Bridge Foreman for position with expanding Michigan contractor. Applicant must be able to handle men and organize work on bridge construction. Write, stating experience, age, and references, plus expected beginning salary: Canonie Construction Co., South Haven, Mich.

Superintendent experienced in heavy sewer & water main construction under difficult conditions, by N. Y. State Contractor. Permanent position for qualified, responsible person looking for advancement with established firm. P-6165, Engineering News-Record.

Gunite man experienced in concrete repairs and pressure grouting. P-6170, Engineering News-Record.

Wanted: experienced estimator to take charge of estimating and purchasing for general contractor in Southwestern Michigan. Send resume of experience together with salary requirements and date available to: P-6187, Engineering News-Record.

POSITIONS VACANT

University Career for Engineers—A number of teaching posts are open at a Canadian Engineering College in the fields of Civil, Electrical and Mechanical Engineering. The academic term extends from September 15th to May 1st and summer months are free for study, research or professional practice. Teaching loads run at 6 to 9 lectures and 3 to 9 laboratory hours, with a maximum of 15 hours per week. Salaries are open, depending on qualifications. Good pension and medical plans. Prime present requirements are in the fields of hydraulics and electronics but engineers in any of the three major fields are invited to inquire. P-6229, Engineering News-Record.

Wanted: Carpenter foreman thoroughly familiar with bridge construction. Must understand plans. Respond to publication. P-6123, Engineering News-Record.

Engineer and estimator for the main office of a well known engineering and contracting organization in Central Penna. Should have the equivalent of a four year college course in Civil or Architectural Engineering. Give full details of qualifications in letter of application. P-6191, Engineering News-Record.

Graduate Civil Engineer Wanted by City of Woonsocket, Rhode Island as Assistant City Engineer—for design etc., of structures and utilities, water-mains, sanitary and storm water sewers. Starting Salary $4,316. with vacation and sick leave benefits. Give full resume of experience and date available in first letter to Director of Public Works, Woonsocket, Rhode Island.

City Engineer: Registered professional engineer desired for City of approximately 50,000. Municipal experience necessary. Salary $6,000. with vacation and sick leave benefits. Give full resume of experience and date available in first letter to the Director of Public Works, Woonsocket, Rhode Island.

Chief Engineer: Progressive Structural Steel Fabricator employing 100 people, located in midwest has immediate opening for licensed engineer experienced in steel fabricating industry. Salary open. Apply with picture and complete resume of experience to: P-6175, Engineering News-Record.

(Continued on the following page)

EMPLOYMENT OPPORTUNITIES

DISPLAYED

The advertising rate is $31.80 per inch for all advertising appearing on other than a contract basis. Frequency rates quoted on request.

An advertising inch is measured ⅞" vertically on a column—3 columns—30 inches to a page.

Subject to Agency Commission.

—RATES—

UNDISPLAYED

$2.10 per line, minimum 3 lines. To figure advance payment count 5 average words as a line.

Position Wanted ads take ½ of above rate.

Box Numbers—count as 1 line.

Discount of 10% if full payment is made in advance for 4 consecutive insertions.

Not subject to Agency Commission.

Send NEW ADS and Inquiries to Classified Advertising Division of ENGINEERING NEWS-RECORD
P. O. Box 12, N. Y. 36. October 17th issue closes October 7th

PROCESS EQUIPMENT ENGINEER

To prepare process flow diagrams and equipment specifications for raw materials handling and iron and steel production facilities.

Some engineering experience required, preferably in a metallurgical industry. Operating experience desirable. Engineering degree required.

WRITE TO OR CALL
G. VICTOR HOPKINS

ARTHUR G. McKEE & CO.
2300 Chester Ave., Cleveland 1, Ohio
Telephone TO-1-2300

POSITIONS VACANT
(Continued from preceding page)

Layout Engineer for large construction project in Central Penna. Must be able to interpret plans and give accurate lines and levels. Give full details of qualifications in letter of application. P-6192, Engineering News-Record.

The State of New Jersey has urgent need for qualified civil engineers with experience or interest in hydraulic or hydrographic engineering. Positions covered by Civil Service; offer excellent promotional apportunities; attractive retirement plan. Starting salaries range from $4740 o $6660 per annum depending upon qualification. Write Dept. Conservation & Economic Development, Div. Water Policy & Snpply, 520 East State St., Trenton, N. J.

Sanitary Engineers II and III; salary ranges $460-$575, $575-725 respectively; two to four years' experience in public health or sanitary engineering; excellent retirement and fringe benefits; liberal leave policy and travel allowances. Write Personnel Officer, Florida State Board of Health, P. O. Box 210, Jacksonville 1, Florida.

Construction Superintendent with performance record on commercial, industrial and institutional buildings in 3 or 4 million dollar range. Must have references to substantiate capability of handling such work at competitive costs. Work will be in Michigan or Northwestern Ohio. P-6240, Engineering News-Record.

Executive Sales Position—With roof deck manufacturer and contractor for Civil Engineer with ability to read and make accurate takeoff from architectural drawings, and experience in negotiating subcontracts with General Contractors. Replies held confidential. P-6264, Engineering News-Record.

Sales Engineer Top Man desiring more than just a job. Must have following in N. J. (N. Y., Pa., etc.) to develop "Package" Sales for Bergen Co. Industrial Builder. P-6280, Engineering News-Record.

Soils Engineer—New York office of long established consulting engineering firm is seeking a civil engineer with a sound, wide-in-scope background in soils and foundation design. Send complete resume to: P-6283, Engineering News-Record.

POSITIONS VACANT

Wanted: Man with Initiative and Know How to manage Reinforcing Fabricating Department of an aggressive midwest fabricator. Must be qualified to Estimate, Sell, and be able to train Draftsmen to detail placing drawings. This is an opportunity for the right man. Reply to P-6279, Engineering News-Record, listing complete information on Education and Experience. Salary open.

EMPLOYMENT SERVICES

Salaried personnel, $5,000-$30,000. This confidential service, established 1929, is geared to needs of high grade men who seek a change of connection under conditions assuring, if employed, full protection to present position. Send name and address only for details. Personal consultation invited. Jira Thayer Jennings, Dept. L. P. O. Box 674, Manchester, Vermont.

Engrs. Designers, Draftsmen, all fields Chem. Metallurgists, I.E.'s use our national coverage. Guilford Personnel Service, 502 American Bldg., Balto. 2, Md.

POSITIONS WANTED

Field Superintendent: Age 44 years. Over 20 years continuous experience in heavy grading, drainage, bituminous concrete and cement concrete pavement. Majority experience highways and toll highways of all types. Also airports, earthfill dams and earth and concrete floodwalls. Presently employed. Present salary $13,000 plus. Available 30 days. References upon request. PW-6065, Engineering News-Record, 520 N. Michigan Ave., Chicago, Illinois.

Civil Engineer—30 years in heavy construction, all phases, with contractors and consultants. PW-6094, Engineering News-Record.

Accountant Comptroller experience in heavy construction, dams, roads, air field bldgs, under ground systems Major accounting special course industrial management now employed go anywhere. Age 47. PW-6173, Engineering News-Record.

Ambitious engineer, 23, married, completing military service desires permanent position with contractor. Have stress experience and training in equipment maintenance. PW-6149, Engineering News-Record.

Civil Eng. 31, married, B.S., M.S. in structures. 6 years experience in construction and estimating. Recent graduate of accredited law school. Top fourth of class. Will consider any opportunity. PW-6117, Engineering News-Record.

Field Engineer—Asst Superintendent college graduate 9 years experience building and industrial construction seeks position northeastern US resume on request. PW-6220, Engineering News-Record.

Land Surveyor—Available Highways Railroads Center Line Cross Sections Plotted Computed. PW-6190, Engineering News-Record.

Chief Structural Engineer, MASCE, BS, New York license. Thirty years in design and construction. Proven administrative and technical ability. Fully qualified to supervise design of industrial buildings, bridges and other structures. Will consider association with architect, available immediately. PW-6228, Engineering News-Record.

Project Manager or General Superintendent. Thirty-five years experience in heavy construction work on domestic and foreign jobs; highways; dams; airfields; powerhouses; concrete and steel structures. Resume and references upon request. Available after October 1. PW-6174, Engineering News-Record.

POSITIONS WANTED

Mech. Engr.—B.S.—35, 10 yrs. experience in all phases of mechanical construction—proven executive ability—desire permanent location western U.S.—teaching or plant maintenance considered. PW-6014, Engineering News-Record.

Structural Engineer—31—registered in N. Y. and Florida—wishes to relocate in Miami area—8 yrs experience in bridges and buildings. PW-6248, Engineering News-Record.

Husband and wife desires overseas employment. Husband graduate civil engineer, 5 years heavy construction and design, presently employed overseas. Wife B.A. in mathematics, qualified teacher and experienced computer. Available January, 1958. PW-6257, Engineering News-Record.

Construction Field Engineer, 26, M.S. in C.E. 3 yrs minor construction and maintenance projects as Ltjg Navy Civil Engineer Corps. Alert, cost conscious. Desire east coast or far west. Available Nov. 15. PW-6284, Engineering News-Record.

Construction Superintendent, Buildings:— Industrial, Commercial, Institutional, Churches, Etc: Field position only desired, age 55—Over 25 yrs. experience. Eastern States preferred. Will travel for reliable contractor. PW-6253, Engineering News-Record.

Structural Engineer-Architect. Two degrees, licensed 3 states, 15 years experience. Handle Building, Engineering projects client to completion. Desire associateship with principal possibilities. Resume upon request. PW-6259, Engineering News-Record.

Structural engineer, 24, BS Arch. Eng, EIT, 2 years experience structural design. Good knowledge of methods of indeterminate analysis. Prefer south. PW-6261, Engineering News-Record.

Structural Engineer, 24, E.I.T., BCE M.I.T., Experience: 1 yr. field, 1 yr. office, Prefer Middle West location. PW-6262, Engineering News-Record.

Cost Engineer: Experienced construction civil engineer desires responsible position. Can set up budgets, chart of accounts, equipment and plant cost analyses, detailed graphic cost and manhour reports and segregation of extra work costs for claims. PW-6263, Engineering News-Record.

Plant Engineer: Heavy construction civil engineer experienced in design and detailing for formwork, and temporary construction facilities such as cableways, cofferdams, caissons, concrete equipment and job services seeking office position. PW-6267, Engineering News-Record.

BSCE EIT 23 eighteen months experience on inspection and administration of construction contracts for the Navy. Varied construction experience while attending college. Seeks start with general contractor in Chicago area. Available 15 November 1957. PW-6099, Engineering News-Record.

Architect, 36, A.I.A., N. J. Registration. Broad experience all phases of office work, specifications, engineering, coordination, client-contractor relations. Desires responsible position in N. Y.-N. J. area. Free to travel. PW-6245, Engineering News-Record.

Construction Executive: 20 years sound experience, Engineering and Project Manager, Estimating, Supervision, Management. Industrial building construction and mechanical installations from customer contact to completion of projects. Desire permanent connection with expanding Utility on power plants or Engineering and Construction Firm. PW-6242, Engineering News-Record.

Highway Engineers - Designers & Draftsmen
Bridge Engineers - Designers & Draftsmen
Architectural - Designers & Draftsmen

Permanent employment for qualified men. Ample opportunity for advancement based on merit; plus excellent retirement program, group life insurance, hospitalization, paid vacations and holidays. Salary commensurate with experience.
Architectural openings in Rochester, Pa. Highway & Bridge openings in Pennsylvania, Maryland, Mississippi, Ohio & West Virginia.

Air Mail Resume To: R. L. SHAW, *Personnel Director*

MICHAEL BAKER, Jr., INC. Baker Bldg. Rochester, Pa.

REQUIRED FOR OFFSHORE CONSTRUCTION

One Electrical Superintendent
One Mechanical Superintendent

Must take charge of all field construction work and have engineering background to estimate work when required.

Send resume or apply in person

PETER KIEWIT SONS CO.
545 South Broad St. Trenton, New Jersey

AREA ENGINEER
(CIVIL—HIGHWAYS)
FOREIGN EMPLOYMENT

U. S. Consultant requires services of broadly qualified highway engineer 15-25 years experience in design, maintenance and construction to join established group of American engineers engaged on an extensive highway program in a Near East Country. Living conditions good. Liberal salary and living allowances; transportation of family plus other attractive allowances and benefits. Send detailed personal record. Applicants' confidence will be respected.

P-5779—Engineering News-Record
Class. Adv. Div., P.O. Box 12, N.Y. 36, N.Y.

HEAVY CONSTRUCTION ESTIMATOR WANTED

Highest grade man wanted; must be graduate C.E.; experienced in large concrete structures, bridges, elevated highways, pumping stations, flood control projects, industrial construction, etc.; able to make correct quantity surveys and prepare possibly with some assistance in the beginning complete estimates. Location Chicago office of large engineering contractor. Permanent position, commensurate salary. Please state age, education, short experience outline, present salary, references who will not be contacted without your consent, and when available.

P-6201, Engineering News-Record
520 N. Michigan Avenue, Chicago 11, Illinois.

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P-6273, Engineering News-Record,
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BY SANITARY DISTRICT, MID-ATLANTIC STATE, CIVIL ENGINEER WITH SOME SANITARY ENGINEERING EXPERIENCE OR SANITARY ENGINEER WITH SOME STRUCTURAL ENGINEERING EXPERIENCE. EXCELLENT OPPORTUNITY, GOOD SALARY. PLEASE STATE FULL QUALIFICATIONS, EXPERIENCE, REFERENCES.

P-6132—Engineering News-Record
Class. Adv. Div., P. O. Box 12, N. Y. 36, N. Y.

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DESIGNERS
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BRIDGES
HIGHWAYS
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P-6083 Engineering News-Record, 1125 W. 6th St., Los Angeles, Calif.

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P-6275, Engineering News-Record
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WANTED:

STRUCTURAL ENGINEER BY SANITARY DISTRICT, MID-ATLANTIC STATE, YOUNG MAN, EXCELLENT OPPORTUNITY, SOME CONSTRUCTION EXPERIENCE REQUIRED. PLEASE STATE FULL QUALIFICATIONS, EXPERIENCE, REFERENCES.

P-6135, Engineering News-Record
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Personnel Department
404 City-County Building
Madison 9, Wisconsin

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RW-6145, Engineering News-Record
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(Classified Advertising)

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SATURDAY, OCT. 19, 1957. 10:00 A.M. (C.D.T.)

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HD-20 with 4 C.Y. hyd. hi-lift. D-7 cable hi-lift. One TD-14 with Drott 4 in 1, 3 mos. old; and TD-14 hyd. hi-lift. TD-9 hi-lift. D4-HT4 hyd. hi-lift, 7U series. Pettibone-Mulliken 1½ C. Y. hi-lift and I-H Super A hyd. loader. Ford tractor with Wagner loader & backhoe.

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Four model C Roadster Tournapulls, Cummins powered. Two model 43FDT Euclid bottom dumps, and one 43FDT Euclid 5000 gal. water wagon, Buda powered. LeTourneau B-T scraper (1956).

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Rex model 34-E dual drum paver. Jaeger 11-S mixer and Rex 16-S mixer. Triline TL-A concrete saw. 2 Jaeger 3½ C.Y. and 3 C.Y. truck mixers.

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MISCELLANEOUS

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CHICAGO EQUIPMENT SALE Fall 1957

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1—160 Cu. Ft. Schramm Portable Air Compressor Gas Driven, skid mounted, in first class operating condition $1250.00
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FS-6236, Engineering News-Record
Class. Adv. Div., P. O. Box 12, N. Y. 36, N. Y.

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Who's to Operate the Seaway?

A DECISION IS PENDING as to what organization will operate and maintain the U.S. portion of the St. Lawrence Seaway. The St. Lawrence Seaway Development Corporation, commissioned by act of Congress to build and operate the toll facility, wants to staff the waterway. The Corps of Engineers, on the other hand, thinks it should do the operating job.

The Corps is quite serious in its appeal to be allowed to operate the Seaway—as it does other navigable waterways, Sault Ste. Marie and the Panama Canal included. The St. Lawrence Seaway Development Corporation is just as determined to do in fact what it was created to do by legislative direction. It wants to start recruiting an organizing staff right now. Limited operation along the St. Lawrence is scheduled for next spring.

There is strong support for both sides: Shippers looking for low tolls have joined other friends of the Corps of Engineers, who now operate exclusively toll-free facilities financed out of annual appropriations—except at Panama. East Coast ports and others, who fear competition of a low-toll Seaway, oppose the wishes of the Corps. They label the Corps' ambitions for the St. Lawrence as "pure empire building." And they are behind the newest proposal to shift the Seaway Corporation away from Presidentially delegated authority of Army Secretary Wilbur M. Brucker, and into the domain of the Commerce Department (ENR Sept. 26, p. 19).

One way to resolve the question—and end the interagency squabble—is obvious.

First of all, leave the Corporation where it is—with the Army Department. This Corporation was created to build, finance and operate a waterway that had been already pretty well planned by the Corps of Engineers. In the interests of construction economy, as well as harmony in the Executive Branch of the federal government, the Corporation engaged the Corps as its agent to prepare final designs, award contracts and supervise the building of the Seaway.

Secondly, the Corporation now could make the Corps its operating agency, without relinquishing control over the completed facility, its operation, or the all important fiscal responsibility of repaying through tolls the $140 million investment of taxpayers' dollars.

This is the crux of the question to be settled by Secretary of the Army Brucker, who is by delegation the Administration's top man on Seaway matters. However, the basic question is fraught with all sorts of overtones of power politics—not as easily settled as it looks. Obviously the Secretary is having difficulties in getting agreement.

With its proved ability, the Corps of Engineers could operate and maintain the physical facilities of the Seaway without getting into policy matters respecting tolls and toll collections. There is ample precedent for such an arrangement in an agreement previously concluded between the Seaway Development Corporation and the U.S. Coast Guard. Secretary Brucker arranged earlier this year for the Coast Guard to furnish and operate navigation aids for the Seaway route, just as it does for other U.S. inland waterways.

Industry Must Open Up

ASIDE FROM ITS BRILLIANT TECHNICAL FEATURES, the Bound Brook, N. J., waste treatment plant of the American Cyanamid Co. (see p. 25) has a broad significance as it relates to the problem of communication among industrial waste treaters, their sanitary engineer colleagues and the general public.

Industry, in general, has been loath to give out with hard facts and figures about its wastes and waste treatment facilities—to the disappointment and frustration of sanitary engineers, including a good many employed by industry. The Bound Brook situation, as related in this issue, serves admirably to point up the shortsightedness of industry's communications policy.

For many years American Cyanamid took it on the chin, so to speak, from pollution regulatory people, municipal officials, the sanitary engineering profession at large and the public for its not fully explained refusal to join in an authority's efforts to clean up the Raritan River. It appears now that the company had good reasons for its actions. Although it is difficult to say now what might have been the exact effect of Cyanamid's telling its story several years ago, when criticism was at its peak, it is probable that frank revelation then would have aided the company, the profession and the public in reaching prompt and amicable agreement.

Another current and extremely important manifestation of the silent policy on facts and figures is in the chemical industry's reaction to the chloride control proposal of the Ohio River Valley Water Sanitation Commission (ENR July 18, p. 30 and July 25, p. 152). Industry representatives have been exerting strenuous efforts, largely behind the scenes, to quash the proposal. Their stated reasons for opposition don't appear to us—nor to many in the sanitary profession—to hold much water.

It is very likely that the chemical industry has many tenable arguments on its behalf, which would aid in reaching accord on the chloride control proposal. But so far few such reasons have been presented.

There are other less notable cases that could be cited to support the contention that industry's close-mouthed policy concerning its wastes problems is not doing justice to itself or anybody else. We commend to industry a freer communications policy, and we offer these pages as one implement.